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REPORT OF  
COOPERATIVE BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS  
IN THE NORTHEASTERN STATES\*  
CALENDAR YEAR 1941  
ALSO  
PERIOD 1918 - 1941, INCLUSIVE

By

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## INDEX

GENERAL STATEMENT.....	Pages	1-6
Economic Importance of The Work.....	Page	1
White Pine Conditions.....	"	2
Pine Infection Conditions.....	"	2
Status of Ribes Eradication Work.....	Pages	3-4
Summary of Accomplishments.....	"	4-6
 BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS BY PROGRAMS.....	Pages	7-102
REGULAR COOPERATIVE PROGRAM.....	"	7-35
Policy.....	"	7-8
Personnel.....	"	9-10
Informational and Service Activities.....	"	11-14
Cooperation.....	"	15-18
Ribes Eradication.....	"	19-26
Nursery Sanitation.....	"	27-29
Ribes Nigrum Elimination.....	Page	30
Blister Rust Canker Elimination.....	Pages	31-32
Pine and Control Area Mapping.....	Page	32
Total Expenditures.....	Pages	33-35
C.C.C. PROGRAM.....	Pages	36-50
General Statement.....	Page	36
Distribution of Work and Personnel Employed.....	"	37
Basis of Costs.....	"	37
Ribes Eradication.....	Pages	38-46
Nursery Sanitation.....	"	46-47
Blister Rust Canker Elimination.....	Page	47
Pine and Control Area Mapping.....	"	48
Total Expenditures.....	Pages	49-50
W.P.A. PROGRAM (F. A. Projects).....	Pages	51-91
Allotments and Purposes.....	Page	51
Economic and Social Value.....	Pages	51-52
Responsibilities and Supervision.....	"	52-53
General Statement Regarding 1941 Activities.....	"	53-54
Personnel and Employment.....	"	55-58
Hours of Work and Wage Scales.....	Page	59
Lost Time, Transportation, and Safety Measures.....	"	60
Injuries and Compensation.....	Pages	61-62
Activities of Regional Office.....	"	63-66
Ribes Eradication.....	"	67-74
Pine and Control Area Mapping.....	"	74-75
Nursery Sanitation.....	Page	76
Ribes Nigrum Elimination.....	"	77
Blister Rust Canker Elimination.....	Pages	77-78
State and Local Cooperation.....	"	78-79
Allotments.....	"	80-83
Total Expenditures by States and Projects.....	"	84-91



STATE AND LOCAL W.P.A. PROGRAMS.....	Pages	92-96
General Statement.....	Page	92
Ribes Eradication.....	Pages	93-94
Nursery Sanitation.....	Page	95
Pine and Control Area Mapping.....	"	95
Total Expenditures.....	"	96
S.C.S. PROGRAM.....	Pages	97-100
General Statement.....	Page	97
Ribes Eradication.....	"	98
Nursery Sanitation.....	"	99
Total Expenditures.....	"	100
N.Y.A. AND N.V.S. PROGRAMS.....	Pages	101-102
Ribes Eradication - N.Y.A. Program.....	Page	101
Ribes Eradication - N.V.S. Program.....	"	102
Field Studies - N.V.S. Program.....	"	102
ALL PROGRAMS (1941).....	Pages	103-120
Personnel Employed.....	Page	103
Ribes Eradication.....	Pages	104-110
Nursery Sanitation.....	Page	111
Pine and Control Area Mapping.....	"	112
Blister Rust Canker Elimination.....	"	113
Cultivated Ribes Compensation.....	"	113
Total Expenditures.....	Pages	114-120
ALL PROGRAMS (1918-1941).....	Pages	121-139
Ribes Eradication.....	"	121-126
Nursery Sanitation.....	"	127-130
Ribes Nigrum Elimination.....	"	131-132
Blister Rust Canker Elimination.....	"	133-134
Pine and Control Area Mapping.....	"	135-136
Cultivated Ribes Compensation.....	Page	137
Total Expenditures.....	Pages	138-139



## COOPERATIVE BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS IN THE NORTHEASTERN STATES

This report summarizes and analyzes blister rust control activities and accomplishments in the Northeastern States during 1941 and for the period 1918-1941, inclusive. The information is segregated by work programs, each being complete in itself, and divided into the various control projects - Ribes eradication, nursery sanitation, Ribes nigra elimination, pine and control area mapping, and blister rust canker elimination. The data for this report were compiled from the yearly statistical records submitted by the state leaders and the Cambridge Regional Office records of expenditures from federal funds. No attempt has been made to discuss future plans, since they will be presented in separate statements as needed. Separate reports will also be submitted for any field studies made during 1941.

### Economic Importance of The Work

Control of blister rust is essential to prevent serious losses in the white pine forests of the Northeastern States which comprise approximately five and a quarter million acres, 98 percent being in state and private ownership, mostly farm woodlots. White pine is the principal forest tree over a considerable portion of the Region and one of the chief sources of income. For example, in New Hampshire and Maine, over two-thirds of the total timber cut is white pine. Most sections of the Northeastern Region are not blessed with good soil, but it is suitable for growing white pine. In good quality sites, it is possible to grow 30 to 40 thousand or more board feet of eastern white pine per acre in sixty years, this rate of growth being considerably greater than that in most other regions of the country. With the rapid elimination of the virgin pine in the West, the eastern white pine becomes increasingly important. The great demand for this eastern species for numerous uses in connection with the war effort has re-emphasized its importance to the national economy. The heavy cutting operations since 1940 together with the tremendous loss of merchantable timber caused by the hurricane of 1938 make it particularly essential that the immature stands, which were not appreciably damaged by the storm, be given adequate protection to assure a continued future supply of eastern white pine. Sustained yield and a permanent lumber industry are not possible in the white pine sections of the Northeast without control of blister rust.

Apart from its commercial worth, eastern white pine has a high value for watershed protection and has been planted extensively for that purpose as well as many others. From a scenic and recreational viewpoint, white pine adds immeasurably to the attractiveness of the region. Its value in this respect probably equals or exceeds its commercial worth. The Northeastern States are fast becoming one of the principal year-round playgrounds of America. In New England alone, the value of the tourist business is estimated at over 400 million dollars per year. The white pine forests are an important factor in attracting visitors to this region.



### White Pine Conditions

Based on the best available estimates, the white pine forests in the Northeastern States comprise approximately five and a quarter million acres. According to the permanent control records, recently submitted by the state and district leaders, there are 4,332,695 acres of white pine in the present net blister rust control area. The white pine acreages by states are as follows:

State	Acreage of White Pine in Net Control Area
Maine.....	972,709
New Hampshire.....	1,408,720
Vermont.....	187,562
Massachusetts.....	659,954
Rhode Island.....	57,611
Connecticut.....	69,178
New York.....	853,770
New Jersey.....	3,771
Pennsylvania.....	159,420
Total.....	4,332,695

In compiling the permanent control records, detailed maps were available for approximately 60% of the total pine acreage in the net control area. The balance of this acreage is based on spot maps or estimates by the district leaders.

### Pine Infection Conditions

Blister rust infection is general on white pine throughout New England and New York. Over extensive areas, from one to twenty percent or more of the pines are infected; and in many local pine tracts, from 50 to 100 percent of the trees are dead or dying. The amount of disease varies considerably in different localities and is directly influenced by such factors as the number of original infection centers caused by the planting of imported diseased pine, the distribution and amount of native pine, association of pine and Ribes, abundance of Ribes, climatic conditions, and the application of control measures. Pine infection is the heaviest in Essex and Warren Counties, N.Y., the upper Connecticut River Valley region in New Hampshire and Vermont, and in the south central portion of Maine where the Ribes are generally abundant. In southern New England and in most of the southern and western sections of New York pine infection is relatively light, except in a few limited areas.

Blister rust was first reported on native white pines in Pennsylvania in 1937 and not until 1954 in New Jersey. The relatively slow spread of the disease prior to that time in these two states may be attributed chiefly to the fewer plantations of imported diseased stock and to the localization of native pine areas. Most of the native white pine in New Jersey is located in the Northwestern corner of the state, and initial protection has been extended to all the important areas. No control work has been performed in that state since 1937. Studies made in unprotected pine areas in Pennsylvania during 1934 and 1935 as well as general observations showed that the amount of infection on white pines was increasing at an alarming rate. In many sections of Pennsylvania, numerous large Ribes are encountered, and a rapid intensification of the disease results once it becomes established. The availability of relief labor for control work since 1933 has been an important factor in saving thousands of acres of white pine in that state from serious damage by blister rust.



## Status of Ribes Eradication Work

Based on the recently completed permanent control records, the net control area in the Northeastern States comprises 12,891,768 acres. As of December 31, 1941 initial control work has been completed on 10,433,136 acres or 80.9 percent of the net control area, and 3,524,093 acres or 27.3 percent have been worked a second time. The status of the control work in the respective states is as follows:

State	Net Control Area	Acreage Worked in Net Control Area		Percentage Net Control Area Worked	
		Initial	First Re-erad.	Initial	Re-erad.
Maine .....	2,496,973	2,113,809	692,001	84.7	27.7
New Hampshire.....	3,173,392	2,873,280	804,694	90.5	25.4
Vermont.....	812,220	371,742	73,854	45.8	9.1
Massachusetts.....	1,949,218	1,912,054	827,880	98.1	42.5
Rhode Island.....	182,618	180,271	152,021	98.7	83.8
Connecticut.....	375,461	364,358	144,310	97.0	38.4
New York.....	2,906,748	2,081,815	713,887	71.6	24.6
New Jersey.....	16,742	16,742	1,417	100.0	8.5
Pennsylvania.....	978,396	517,165	113,952	52.9	11.6
Totals.....	12,891,768	10,433,136	3,524,093	80.9	27.3

The acreages worked in the net control area as listed above do not agree with the gross acreages worked as summarized in Tables 94 and 95 on Pages 123 and 124 of this report. The latter were compiled from the annual statistical reports submitted by the state leaders. In compiling the net control area acreages, many areas which had been previously examined for Ribes were eliminated for various reasons, such as: pine no longer exists due to fire or logging, pine did not meet minimum stocking requirements, areas of poor quality pine or mature pine areas where no further control work needed; and reduction in width of protection zones. In some instances, especially in Vermont, the preparation of the new permanent control records and maps was complicated by the fact that there were no available maps showing areas cleared of Ribes during the early years of the control program when the work was performed chiefly by owners' labor. Every effort was made to locate these early maps in Vermont, but they were apparently destroyed at the state office at Montpelier some time during the period when no state blister rust control leader was employed in that state. Many of the early control areas in Vermont have been re-worked subsequent to 1933. However, due to the loss of the original control area maps, such tracts would be designated as initial work on the permanent control area maps. Consequently, the acreages of both the initial and re-eradication work as computed from these permanent maps were considerably less than the acreages as compiled from the state leaders' annual statistical reports as summarized in Tables 94 and 95.

### Portion of Net Control Area on Maintenance Basis

In preparing the permanent control records and maps, the district leaders were instructed to place any areas on a maintenance basis if the Ribes in these tracts are so scarce that danger from blister rust appears negligible for an indefinite period. To assure the continuation of this safe condition, periodic examinations and possibly some Ribes eradication by scouting methods will be necessary. As indicated in the following summary, large acreage in New Hampshire



Massachusetts, Rhode Island, Connecticut and New York were placed on a maintenance basis during 1941. It is expected that the maintenance acreages in all states will be materially increased after necessary scouting work has been performed to determine present Ribes conditions.

Acreages on Maintenance Basis - December 31, 1941

State	Acreage Reported On Maintenance Basis	Percentage of Net Control Area On Maintenance Basis
Maine.....	91,705	3.7
New Hampshire.....	251,947	7.9
Vermont.....	39,618	4.9
Massachusetts.....	728,587	37.4
Rhode Island.....	177,952	97.4
Connecticut.....	227,709	60.6
New York.....	216,820	7.5
New Jersey.....	0	0
Pennsylvania.....	6,351	0.6
Total.....	1,740,669	13.5

General Summary of Blister Rust Control Accomplishments  
in The Northeastern States During 1941 and The Period 1918 - 1941, Inclusive

Ribes Eradication

Ribes eradication work under all programs during 1941 resulted in 575,572 acres being cleared of 5,721,743 wild Ribes and 10,873 cultivated bushes or an average of 9.9 wild Ribes per acre. Such activities required 78,609 man days labor (exclusive of supervision) and cost \$262,331.76 or \$.456 per acre. Of the total acreage worked, 38.3% was under the Regular Cooperative Program, 9.7% under the C.C.C. Program, 50.6% in connection with the Federal Agency W.F.A. projects, and 1.4% under the State W.F.A., N.Y.A. and N.V.S. Programs. The states and local cooperators paid 24.5% of the total costs of the work.

Based on the state leaders' annual statistical reports for the period 1918-1941, inclusive, initial control work was performed on 11,342,326 acres and 4,475,796 acres were re-worked, all of the latter work being performed subsequent to 1922. Such activities resulted in the destruction of 277,894,749 wild bushes and 864,026 cultivated Ribes and required 2,700,208 man days labor. The total cost of all the Ribes eradication work was \$7,439,018.52, or \$.456 per acre. Control activities under the various Emergency Programs since 1933 accounted for 6,546,135 acres, or 40.1% of the total area cleared of Ribes in the Region since 1918. The Emergency Programs have made possible the systematic working of large areas, rather than individual units, and have also permitted the application of control measures on lands where such work was urgent, rather than basing the selection on local cooperation. This control work has served to eliminate many sources of infection that otherwise would have persisted. However, during the past two years, relief labor has not been available in many of the sections where the control work was most urgently needed.



## Ribes Nigrum Elimination

Black currant elimination has been conducted as a special project in four states - Massachusetts, Rhode Island, Connecticut and New York, but none of this special work was performed during 1941.

As indicated in Table 101, a total of 103,376 *Ribes nigrum* and 44,685 other cultivated bushes were destroyed in connection with the special black currant elimination projects in the four states mentioned above during the period 1933-1940, inclusive. In Rhode Island and Connecticut, the work has been completed; and in Massachusetts, it has been finished on the mainland. Out of a total of 996 townships in New York, the project has been completed in 236 and partially finished in 33 others - Table 103. Such bushes have been eradicated in the worked portions of the control areas in the other Northeastern States in conjunction with the regular control activities. Few *Ribes nigrum* have been found in the latter states.

During the period 1937-1940, inclusive, a check was made of the original black currant elimination work in 60 townships in Massachusetts for the purpose of locating any bushes that may have been missed or replanted since the initial survey. On the whole, the results of this follow-up check show thorough inspections were made in the initial work, but it is apparent that some locations were missed, some sprouting had taken place, and there has been occasional replanting. Periodic inspections will be essential if *Ribes nigrum* are to be kept entirely out of cultivation.

## Nursery Sanitation

During 1941, the environs of 3 nurseries were initially examined for *Ribes* and the control areas for 18 other nurseries were reworked. At the close of the 1941 season, 41 nurseries were maintaining sanitation zones; 22 of these nurseries being privately owned, 16 belonging to the respective states, and 3 operated by the Soil Conservation Service - (Table 100). Thirty-eight other nurseries had established sanitation zones, but abandoned them prior to 1941. There were 42,662,319 white pines in the 21 nurseries worked during 1941.

## Pine and Control Area Mapping

Pine and control area mapping is an essential part of blister rust control, especially in sections where the pine areas are scattered and where the *Ribes* eradication work is performed by crews composed of inexperienced men obtained from relief sources. Such maps assist the crew foremen in locating the boundaries of control areas, and consequently limit their activities to crew supervision. Prior to the advent of the Emergency Programs, only a limited amount of pre-eradication survey work was performed chiefly due to lack of funds. The blister rust control leaders' time during the fall, winter and early spring months was devoted mainly to informational and service activities to secure local cooperation in control work during the following *Ribes* eradication season. Therefore, these leaders were unable to do much pine mapping. During the past several years, the unprotected pine areas have been smaller and more scattered; consequently, there has been a greater need for detailed pine and control area maps. The Emergency Programs since 1933 have been of great assistance in providing men to do the necessary mapping.



During 1941, pine and control area mapping was conducted in 399 townships in six of the Northeastern States, a total of 656,716 acres being mapped in detail and 580 miles of control area boundary lines painted in the field. In addition, 1,705,231 acres were definitely eliminated from control work because the white pine in these areas did not meet minimum stocking requirements. This pre-eradication survey work during 1941 required 15,623 man days labor and cost \$68,656.34, of which 85.3% was paid from W.P.A. funds.

Under the various control programs during the period 1933-1940, inclusive, 12,028,436 acres have been mapped in detail and 15,352,400 additional acres examined but not mapped due to lack of sufficient pine to justify the cost of control measures. A total of 16,453 miles of boundary lines were also painted in the field. Such activities, conducted in all states except New Jersey, required 228,660 man days labor and cost \$1,001,831.36. Over 96% of the total acreage mapped in detail was in connection with the projects under the Emergency Programs. Table 107 gives detailed information on the status of the pre-eradication work in the respective states.

#### Blister Rust Canker Elimination

Blister rust canker elimination work has been performed during the period 1932-1941, principally on publicly-owned lands in Maine, Vermont, Massachusetts, New York and Pennsylvania. A small amount of work was also performed during 1937 in New Hampshire on state-owned plantations. In addition, 34 landowners in Maine, Vermont and New York have paid the entire labor cost for such work on their properties under the technical supervision of the respective blister rust control leaders. The work on public lands in Maine was at Acadia National Park where thousands of valuable scenic pines have been saved by the removal of blister rust cankers.

During 1941, W.P.A. laborers were assigned to blister rust canker elimination work on publicly-owned lands in Vermont, Massachusetts and New York, while three land owners in Maine and Vermont paid for similar work on their properties. A total of 157,104 pines were examined and 5,127 fatally-infected trees cut down. In addition, 6,295 cankers were removed from 4,725 other infected pines. This work required 1,831 man days labor and cost \$7,621.62. In some instances, the work in plantations was combined with pruning since it is generally more practicable to prune the lower branches than to inspect each one for blister rust cankers.

Canker elimination work conducted under the Regular Cooperative, C.C.C., W.P.A. and C.N.A. Programs during the period 1932-1941, inclusive, has resulted in the examination of 7,691,491 white pines, 270,942 of which were cut down due to fatal stem cankers. An additional 379,966 pines were treated for infection by removing 912,887 branch cankers and 8,830 stem lesions. Detailed information on the results of such work, by states and programs, is given in Tables 104 and 105.



BLISTER RUST CONTROL ACTIVITIES UNDER REGULAR COOPERATIVE  
CONTROL PROGRAM IN NORTHWESTERN STATES

Policy

During the period 1918 to 1921, inclusive, the Federal Government cooperated with the states in experimental control work on a dollar for dollar basis. This work was conducted in each state under a cooperative agreement between the United States Department of Agriculture and the authorized state regulatory agency, the latter usually being the state forestry department. The control work was directed by the state officials under the general supervision of the Government, which paid a part of the Ribes eradication costs.

In 1922, a new program to secure the general application of control measures was inaugurated by the United States Department of Agriculture in cooperation with the state regulatory agencies. This program has been in operation since that time, but was altered during 1933 to 1941 to include the blister rust control work performed under the various Federal Emergency programs. The object of the regular cooperative work since 1922 has been to accomplish the control of the disease by providing pine owners with the expert advice, leadership, and supervision needed to secure prompt and effective local eradication of Ribes in the pine-growing regions. Prior to the advent of the Government Emergency work in 1933, all Federal cooperative expenditures were offset by state expenditures of at least equal amount.

Since 1936, responsibilities of the cooperating agencies have been as follows:

State Regulatory Agency (Usually the state forestry department)

(1) To furnish the services of a responsible state employee whose duties shall include nominal charge of the cooperative program and direction of the cooperative personnel in all matters concerned with carrying out any State laws and State policies with respect to blister rust control. (2) To cooperate with counties, townships, associations, and individuals in the local eradication of Ribes. (3) To provide such immediate supervision and checking of local eradication of Ribes as will maintain a standard of Ribes eradication satisfactory to the Bureau of Entomology and Plant Quarantine, and in so far as practicable to utilize the facilities of its organization for furthering the cooperative work. (4) To undertake directly or in cooperation with such State agencies as may have jurisdiction, such destruction of white pines and Ribes and such enforcement of State laws as may be necessary for the effective prosecution of blister rust control work, including regulation of the intrastate movement of blister rust host plants. (5) To furnish the necessary office space and facilities for the direction of the cooperative work at State headquarters.



THE HISTORY OF THE CONTROL OF BLISTER RUST

(1) To furnish the services of a chief field leader who shall devote his entire time to the coordination and the prosecution of the control activities of the cooperating agencies in accordance with working plans mutually agreed upon by the responsible representatives of the agencies concerned. (2) To furnish the services of such assistant field leaders as may be agreed upon from time to time in accordance with needs of the work and the availability of funds. (3) To provide these and any other cooperative employees with subject matter and technical information essential to the proper conduct of their work in controlling and preventing the spread of blister rust. (4) To enforce Federal Regulations on the interstate movement of blister rust host plants.

In New England and New York this program has been operated successfully since its adoption in 1922; but in Pennsylvania and New Jersey, the control activities were not organized on a similar basis until 1929 chiefly due to the relatively slow establishment and spread of the rust, scattered distribution of white pine, passive public interest in forestry and lack of adequate state appropriations for control work. The natural spread of the disease subsequent to 1929 has greatly increased the infested area outside New England and New York, especially in Pennsylvania. No control work has been performed in New Jersey since 1937, as initial protection has been established on the few thousand acres of natural pine in that state.

The so-called "Lea Bill", signed by the President on April 26, 1940, authorized the expenditure of federal funds for white pine blister rust control work on private and state lands provided at least an equal amount shall have been appropriated, subscribed, or contributed by state, county or local authorities or by individuals or organizations concerned. The bill also authorized the expenditure of federal funds for control work on Government lands with certain provisions and subject to the approval of the Federal agency or Indian tribe having jurisdiction over such lands. The first allotments of such federal funds for control work on state and privately-owned lands were made available to seven of the Northeastern States in July, 1941.

During the period 1933-1940, inclusive, the regular cooperative control work was necessarily curtailed due to the Emergency Programs. The blister rust control leaders have given complete supervision to all control activities conducted in their respective districts under the P.W.A., W.P.A., and regular cooperative programs. In addition, they have provided technical supervision for control work performed under the C.C.C. and other Emergency Programs. During 1941, there was a general curtailment of control activities under the C.C.C. and W.P.A. Programs, and an increased volume of work under the regular cooperative program primarily due to the availability of "Lea" funds after July 1st.

The permanent personnel of the Division of Plant Disease Control in the Northeastern States during the calendar year 1941 consisted of six regional office employees, eight state leaders (one a collaborator and another a part-time employee), and 27 district leaders. Four of the latter were paid from emergency funds during the entire year. In New Hampshire, the five district leaders spend only three fourths of their time on control work. Under the cooperative agreement, our district leaders in that state also act as district forest fire wardens and the cost of their time while on such special duties is paid from state money other than that allotted for blister rust control. The memorandum of agreement in Vermont was amended effective August 1, 1941, whereby the services and duties of the blister rust control leaders were broadened in order to increase the adoption of blister rust control practices among pine owners, and at the same time to advance forest fire control and the adoption of improved forest practices among timberland owners in Vermont. Under the provisions of the revised agreement, the district blister rust control leaders in Vermont will spend about one fourth of their time on educational fire control and other general forestry work as outlined by the State Forester, the time spent on this work being in approximate proportion to the amount of funds contributed to the leaders' salaries and expenses by the Vermont Forest Service. They will continue to work under the direct supervision of the state leader on blister rust control and they will be responsible to him for all their activities.



10

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CONCORD  
 District Leader  
 T.J. King - SP3

SPRINGFIELD  
 District Leader  
 R.E. Wheeler - P2

WINDHAM  
 District Leader  
 E.M. Brown - P3

WATERVILLE  
 District Leader  
 J.M. White - SP3

HYDE PARK  
 District Leader  
 H.G. Strait - P2

GLOVERSVILLE  
 District Leader  
 J.W. Chanton - P2

LEBAION  
 District Leader  
 G. Richardson - P2

NORTH CONWAY  
 District Leader  
 S.H. Boomer - P2

SHELDON  
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 G.S. Deane - SP3

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 R.W. Holcomb - SP3

LITTLETON  
 District Leader  
 T.L. Kane - SP3

SCHOHARIE  
 District Leader \*  
 H.J. McCasland - P2

ITHACA  
 District Leader  
 C. Kneese - P2

VERMONT  
 State Leader  
 J.E. Riley - P2

CONNECTICUT  
 State Leader  
 J.E. Riley - P3

RHODE ISLAND  
 State Leader (SP3)  
 A.C. White - SP3

PENNSYLVANIA  
 State Leader  
 R.P. Fatzinger - P3

ST. JOHNSBURY  
 District Leader \*  
 E.H. Paine - SP3

TEMPERLEY  
 Assigned as  
 Secretary

TEMPERLEY  
 Assigned as  
 Secretary

TOWANDA  
 District Leader \*  
 C. Williams - P2

CLEARFIELD  
 District Leader \*  
 C. Williams - P2

Field Camp J.F.A. project funds.

1950-1951

## Informational and Service Activities

During the period 1922-1932, inclusive, local cooperators paid the major portion of the Ribes eradication costs, and a large volume of informational and service work was essential to obtain such cooperation. The success of the control program in the Northeastern States has been primarily due to the effective informational and service activities of the state and district blister rust control leaders in securing the cooperation of individuals, towns, and counties in the application of control measures. Due to economic conditions and the availability of relief funds or labor since 1933, no special efforts were made to solicit local cooperation in several of the states; consequently, there was a general decrease in the informational and service activities. However, such activities are still an important phase of the control program and must be continued in sufficient volume to maintain public interest and participation in the control program. Undoubtedly, relief funds and labor for control work will be drastically reduced for the duration of the war, and it will be necessary for the states and local cooperators to assume a larger proportion of the control costs. This will necessitate an increased amount of informational and service work by our leaders. In this connection, the new blister rust film will be of great assistance.

Tables 1 and 2 summarize the informational and service work performed by the district blister rust control leaders during 1941, while the accomplishments for the period 1923-1941, inclusive, are shown in Tables 3 and 4. A considerable amount of informational and service work is also performed by the state leaders and temporary state assistants, but the results of their efforts in this respect are not included in this report as these employees do not submit monthly summaries of such activities to the Cambridge Office.

On the basis of totals for all states, there was a general decrease in the volume of informational and service work performed by the district leaders during 1941 as compared with the previous year, except for initial interviews. The number of meetings addressed and items published decreased 37% and 41%, respectively, primarily due to drastic reductions in these phases of the informational work in New Hampshire and New York. The district leaders in these two states addressed 232 meetings and published 283 news items in 1940 as compared with only 124 meetings and 152 news items reported for the current year. On the other hand noteworthy increases occurred this year in these two phases of the informational work in Massachusetts where only 9 meetings and 3 news items were reported during 1940. Detailed summaries of the 1941 informational and service activities of each district leader have been furnished the respective state leaders by the Regional office together with comments on any pertinent items as brought out by an analysis of the data.



**Table 1 -** Informational Activities Performed in Each of The Northeastern States During 1941 by The Permanent District Leaders

State	Meetings Addressed		Displays Placed	Items Published
	No.	Attendance		
Maine	5	93	1	5
N. H.	68	6,095	18	92
Vt.	16	552	12	13
Mass.	27	1,243	9	17
R. I.	3	54	1	1
N. Y.	56	4,235	56	60
Penna.	-	-	9	2
Totals	175	12,272	106	190

**Table 2 -** Service Activities Performed in Each of the Northeastern States During 1941 by the Permanent District Leaders

State	Initial Interviews	Follow-Up Calls	Personal Instruction in Field (No. Individuals)
Maine	441	294	98
N. H.	1,348	1,556	389
Vt.	416	218	234
Mass.	284	184	34
R. I.	76	62	31
N. Y.	1,180	699	837
Penna.	331	73	342
Totals	4,076	3,086	1,965



Table 3 - Summary, by States, of Informational and Service Activities Performed by Permanent and Temporary District Leaders and Control Leaders in Northeastern States During Period 1928-1941, Indicated

Informational

State	Meetings Addressed (1)		Displays Placed (2)	Publications Distributed (3)	Mimeographed Articles Distributed (3)	Items Published	Posters and Signs Placed (3)
	No.	Attendance					
Maine	1,309	30,866	1,025	65,652	4,846	584	15,805
N. H.	3,119	175,387	1,998	183,853	84,465	4,110	12,837
Vt.	872	26,341	744	30,653	192	581	7,311
Mass.	987	34,659	840	150,907	2,445	2,127	3,105
R. I.	251	19,465	129	35,331	2,250	405	8,104
Conn.	78	2,633	141	12,156	91	641	652
N. Y.	1,680	124,146	730	133,570	3,595	2,558	9,040
Penna.	2	165	37	-	-	7	-
Totals	8,278	413,662	5,642	612,121	77,884	11,013	61,088

(1) Includes "Field Demonstration Meetings".

(2) Includes "Roadside Demonstrations".

(3) No record kept of this item after April, 1934.

In addition, during the period July 1 to December 31, 1922, the following general informational work was performed: 586 meetings addressed with an attendance of 30,890 persons, 374 displays placed, 35,067 publications distributed, 315 items published, and 2,500 posters and signs placed.

Service

State	Initial Interviews	Follow-Up Calls	Persons Instructed in Field
Maine	30,400	10,710	21,085
N. H.	34,771	32,995	20,041
Vt.	13,203	8,543	9,979
Mass.	33,685	12,786	12,304
R. I.	3,599	3,048	689
Conn.	4,076	3,033	1,533
N. Y.	29,504	21,311	20,561
Penna.	1,180	252	513
Totals	150,418	92,628	87,005

During the period July 1 to December 31, 1922, an additional 6,221 interviews and 1,924 follow-up calls were made, and 1,540 individuals received personal instructions in the field.

Data for Pennsylvania covers July 1, 1935 to December 31, 1941 when three district leaders have been employed.



Table 4 -

Informational Activities Performed  
by American and European Military Post Control Leaders in  
Northwest Europe During Period 1923-1941, Inclusive.

## Informational

Year	Meetings Addressed		Displays Placed	Publications Distributed *	Mimeographed Articles Distributed *	Items Published	Posters and Signs Placed *
	No.	Attendance					
1923	1,556	38,081	582	51,508	-	1,203	6,499
1924	1,499	51,121	647	55,696	-	1,269	9,553
1925	1,045	48,434	680	68,818	-	1,294	8,894
1926	700	38,100	624	76,697	-	1,202	8,056
1927	615	37,356	647	88,840	-	1,219	7,041
1928	522	23,937	492	62,703	14,953	1,109	7,268
1929	274	25,627	358	52,332	23,155	769	4,388
1930	188	9,297	342	48,124	20,715	518	3,445
1931	125	8,692	190	36,068	9,165	372	2,922
1932	271	18,678	121	39,562	6,416	340	1,758
1933	276	12,866	81	27,691	3,435	333	1,129
1934	106	10,361	104	4,277	45	182	85
1935	150	14,692	93	-	-	155	-
1936	93	7,048	9	-	-	112	-
1937	89	7,286	63	-	-	74	-
1938	117	11,905	113	-	-	81	-
1939	191	13,606	166	-	-	271	-
1940	277	24,285	144	-	-	320	-
1941	175	12,273	106	-	-	190	-
Totals	8,273	418,662	5,642	612,121	77,884	11,013	61,038

\*No record kept of this item after April, 1934.

In addition, during the period July 1 to December 31, 1922, the following general information work was performed: 586 meetings addressed with an attendance of 30,895 persons, 374 displays placed, 35,067 publications distributed, 513 items published, and 7,500 posters and signs placed.

## Service

Year	Initial Interviews	Follow-Up Calls	Persons Instructed in Field
1923	14,724	5,555	4,274
1924	15,984	6,804	6,196
1925	13,819	7,380	11,169
1926	12,153	7,309	11,559
1927	13,120	8,228	13,102
1928	15,644	8,625	8,952
1929	9,013	6,503	6,741
1930	7,905	5,568	3,166
1931	5,789	5,440	2,070
1932	6,996	4,968	1,884
1933	4,788	3,744	1,818
1934	4,379	2,637	2,123
1935	4,483	3,455	2,253
1936	3,330	2,407	2,266
1937	3,292	2,168	1,864
1938	3,581	2,592	1,671
1939	3,700	2,868	1,723
1940	3,642	3,311	2,207
1941	4,076	3,086	1,965
Totals	150,418	92,628	87,005

During the period July 1 to December 31, 1922, an additional 3,227 initial interviews and 1,924 follow-up calls were made, and 1,540 individuals received personal instructions in the field.



### Cooperation

The informational and service activities have resulted in excellent public participation in blister rust control as evidenced by local co-operators expending a total of \$1,168,536.39 for such activities during the period 1918-1941, inclusive. Of this total, \$495,022.82 was spent by 42,350 individual co-operators, while expenditures of \$529,569.65 and \$143,943.92, respectively, were made from 2,427 town appropriations or allotments and 54 county subscriptions. In addition, state expenditures, other than local cooperation, amounted to \$2,449,595.54. All but \$537,936.49 of the state and local cooperative funds were used on control activities under the Regular Cooperative Program. In addition to the above direct cooperation, thousands of additional owners permitted the destruction of 952,826 cultivated Ribes without compensation, while thousands of others have given general support or personal aid to the control program.

As indicated in Table 5, \$5,705.65 was expended by 87 individual co-operators, \$17,337.08 from 88 town appropriations and contributions, and \$8,695.75 from 6 county allotments for blister rust control work during 1941. In addition, state funds and contributed services for control work amounted to \$66,528.30, making a total of \$86,767.13 state and local cooperative funds expended during the calendar year. Of this total, \$20,036.22 was used on projects connected with the various Emergency Programs.

Due to the volume of work under the Federal Emergency Programs since 1933, no special effort has been made to solicit individual cooperation in any of the states. In spite of this fact, 5,839 owners have spent \$40,833.97 on control work during the past nine years. The total number of individuals includes 2,762 who cooperated in cultivated Ribes eradication only, the majority of these being in Massachusetts.

Town cooperation in connection with the Regular Cooperative Program has been obtained chiefly in Maine, New Hampshire and Connecticut. However, a small amount of town money has been provided for work under the Regular Program in Vermont, Massachusetts and New York. Numerous towns in Vermont and Massachusetts have also cooperated by providing transportation for U.P.A. crews since 1935. In New Hampshire, town cooperation has been solicited since 1918 and as a result \$429,284.12 has been expended for control work in that state from 1,417 town appropriations and 20 contributions. This cooperation in New Hampshire represents 68.2% of the total town expenditures in the Region for all years. Excellent cooperation has also been obtained from the towns in Maine since 1921; \$129,143.38 being expended from 762 appropriations and 20 contributions. The town money in New Hampshire is turned over to the state and expended with additional state money to eradicate the Ribes from definite blocks, irrespective of property lines. A similar procedure has been followed in Maine since 1931 except that the towns handle the disbursement of the funds and the state reimburses the towns for their proportionate share, amounting to about one third of the costs.

Beginning in 1940, a new plan was adopted for town cooperation in Connecticut whereby small annual appropriations are made for blister rust control maintenance work, and the funds are allowed to accumulate until such time as the money is needed for control activities in the towns. Under this plan, five towns appropriated \$875.00 during 1940 while 11 town appropriations totalling \$1,765.00 were made in 1941. The amount of the various appropriations ranged from \$25. to \$300. None of the town money was used during 1940 and 1941, but it is planned to carry on work with these funds in two towns during the 1942 season. Certain legal difficulties have been encountered in connection with this plan as the attorney general has ruled that the establishment of such sinking funds is illegal unless specifically authorized by the state legislature. It is hoped that such action will be taken in the near future.

At the annual town meetings in March, 1942, 30 towns in Maine and 21 towns in New Hampshire appropriated \$4,325. and \$5,835. respectively for control work. The total for Maine includes \$550. unexpended balance from five 1941 appropriations. In addition, the City of Portland, Maine has tentatively approved the expenditure of \$500. for control work on lands of the Portland Water District.

Early in 1942 the state of New York passed a law permitting towns to appropriate up to \$1,000. annually for blister rust control work. Town cooperation was later solicited only in the Warren and Essex County District with excellent results. District Leader Harpe reported that 12 towns have raised \$8,000. for control work during the 1942 season. According to present plans, town cooperation will soon be solicited in some of the other New York districts.

County cooperation has been restricted to New Hampshire and New York during the period 1929-1941, inclusive, a total of \$43,943.26 being expended from 54 allotments. Of this total, \$42,219.84 was spent from 48 contributions in New York, chiefly in the Saratoga District. During 1941, six counties in New York spent \$8,696.15 on control activities, and excellent cooperation is being obtained in 1942 especially in Saratoga and Washington Counties.



Table 5 - Local Cooperation in Blister Hunt Control Work in Northeastern States

1941

State	Individual Cooperation				Town Cooperation			County Cooperation		
	No. Cooperators		Amount		No. Town	Amount Town Money		No. County	Amount	County Funds Expended
	Cult. Wild & Ribes Erad. Only	Canker Elimination Erad.	Spent By Individual Cooperators	Contributions		Appropriations	Contributions			
Maine	-	2	279.32	24	-	-	5,050.00	-	5,240.96	-
N. H.	-	1	399.58	55	-	-	9,225.00	-	8,519.39	-
Vt.	-	19	876.53	-	9	-	-	2,066.27	2,066.27	-
Mass.	29	-	29.20	-	7	-	-	1,740.06	1,740.06	-
Conn.	-	4	360.92	11	-	-	2,640.00	-	-	-
N. Y.	-	28	1,753.32	-	2	-	-	270.40	270.40	6 8,695.75
Penna.	1	-	4.45	-	-	-	-	-	-	-
Totals	30	54	3,705.85	70	18	16,915.00	4,076.73	17,837.08	8,695.75	6

1922 - 1941

Maine	621	10,451	24	84,096.87	762	20	139,375.93	2,191.19	122,144.83	-
N. H.	-	543	-	46,103.01	1,213	20	408,315.00	1,607.54	406,707.46	6 1,724.00
Vt.	172	2,106	9	69,819.77	11	59	1,422.75	22,215.69	23,413.59	-
Mass.	10,724	10,913	-	95,091.62	-	41	-	18,341.14	18,341.14	-
N. Y.	195	300	-	9,186.49	-	51	16,936.75	12,712.91	26,824.80	-
Penna.	-	5,917	1	132,230.66	-	5	-	360.40	260.40	48 42,319.00
Totals	13	299	-	2,193.68	-	-	-	-	-	-
Totals	11,715	30,570	34	401,780.50	2,037	194	566,100.46	57,935.25	602,814.03	54 1,813.00

1918 - 1941

Maine	621	10,491	24	35,249.38	762	20	139,375.93	2,194.19	127,143.73	-
N. H.	-	690	-	48,203.57	1,414	20	434,350.00	1,607.94	429,724.12	6 1,724.00
Vt.	172	2,132	9	78,050.50	11	59	1,422.75	22,215.69	23,413.59	-
Mass.	10,724	10,994	-	101,000.72	4	41	1,700.00	16,844.14	20,543.56	-
N. Y.	-	8	-	531.55	-	-	-	-	-	-
Conn.	195	302	-	9,323.49	36	51	16,936.75	12,712.91	26,324.60	-
Penna.	-	5,858	1	174,556.74	-	5	-	360.40	260.40	48 42,319.00
Totals	13	289	-	2,182.23	-	-	-	-	-	-
Totals	11,715	30,601	34	406,134.31	2,037	194	566,100.46	57,935.25	629,014.57	54 1,813.00



Table 6 - Local Cooperation in Blister Rust Control Work in Northeastern States  
1918-1941, inclusive

Individual Cooperation					Town Cooperation					County Cooperation	
No. Cooperators	Cult. Ribes & Wild Ribes	Cult. Ribes	Canker Infected	Amount Spent By Individual Cooperators	No. Town		Amount Town Money		Total Expended	No. County Allotments	Amount County Funds Expended
					Appropriations	Contributions	Appropriated	Contributed			
1918	-	13	-	4,188.63	45	-	7,300.00	-	5,029.11	-	-
1919	-	50	-	6,645.74	39	-	6,310.00	-	7,907.31	-	-
1920	-	152	-	8,493.78	51	-	8,675.00	-	7,992.09	-	-
1921	-	142	-	12,903.77	34	-	5,550.00	-	5,827.05	-	-
1922	-	971	-	28,035.13	58	-	20,538.29	-	18,448.62	-	-
1923	-	1,568	-	40,989.47	121	-	39,530.00	-	40,150.59	-	-
1924	1,714	3,050	-	44,622.07	151	-	48,429.35	-	48,898.50	-	-
1925	358	3,069	-	39,720.06	132	-	40,975.00	-	40,351.31	-	-
1926	741	3,283	-	44,254.88	125	-	40,425.00	-	41,325.92	-	-
1927	854	3,537	-	49,040.81	125	-	38,127.00	-	38,292.74	-	-
1928	921	3,300	-	54,367.66	143	-	41,117.00	-	39,038.13	-	-
1929	1,019	3,334	-	49,785.39	156	-	41,595.25	-	41,323.23	4	337.90
1930	971	2,419	-	32,999.65	186	-	48,143.50	-	46,880.12	3	1,112.10
1931	758	1,172	-	18,592.61	175	-	48,599.00	-	47,455.36	8	2,699.92
1932	313	1,488	14	19,500.18	81	-	19,217.09	-	19,575.93	6	1,252.82
1933	465	854	1	8,944.07	55	-	11,615.10	-	11,414.04	4	694.43
1934	1,331	773	-	8,637.68	13	-	4,571.00	-	4,573.35	5	831.35
1935	11	481	-	3,258.31	66	23	16,095.00	4,243.82	20,198.37	1	425.60
1936	20	301	-	1,306.20	84	31	17,150.00	14,128.67	22,023.68	2	937.00
1937	195	73	6	5,168.08	95	23	21,150.00	6,735.57	20,092.00	3	849.75
1938	85	123	3	4,852.43	82	17	18,975.00	9,720.01	27,327.77	5	9,876.04
1939	175	121	4	1,943.38	76	55	16,425.00	9,544.72	25,043.53	4	7,524.34
1940	52	27	3	2,717.77	75	25	16,855.00	3,495.57	24,157.12	3	3,110.50
1941	30	54	3	3,705.85	70	18	13,915.00	4,076.73	17,837.03	6	8,695.75
1942	11,735	30,891	34	495,022.82	2,233	194	553,335.46	57,935.26	639,550.65	54	43,943.93



Results Accomplished in Ribes Rust Control Under  
Regular Cooperative Program in the Northeastern States

Ribes Eradication

All of the Northeastern States, except Rhode Island and New Jersey, conducted Ribes eradication work under the Regular Cooperative Program during 1941, a total of 220,534 acres being cleared of 1,396,093 wild Ribes and 1,009 cultivated bushes as a result of 14,832 man days labor. The total cost of this control work was \$60,036.44, or \$.275 per acre. Local cooperators paid 42.7% of all costs, the states 38.3%, and the Federal Government contributed 19.1%, all of the latter expenditures being from Lea funds.

The total acreage cleared of Ribes under the Regular Cooperative Program during 1941 represents an increase of 143 percent over the preceding year, whereas the total expenditures for such activities were only 51 percent greater in 1941. This striking increase in acreage cleared of Ribes during 1941 was due primarily to the availability of Lea money for control work in August and September. With such funds it was possible to employ experienced men for Ribes scouting and to conduct the work in sections where it was most urgently needed whereas during the past few years under the Emergency Programs it has been necessary to perform the work near the sources of labor which in many instances were limited.

The results accomplished in Ribes eradication work under the Regular Program in each of the Northeastern States during 1941 are summarized in Table 7. Of the total acreage worked, 52.4% was in New York and 20.5% in Connecticut. The total acreage examined under this program represents 38.3% of the total area worked in this Region during 1941. No satisfactory comparison can be made between the results of the initial and re-eradication work (Table 7) as the same areas are not involved. However, it will be noted that on the basis of totals only 4.5 Ribes per acre were found on the re-eradication projects as compared with 10.5 on the initial work. The Ribes per acre values for the two classes of work in the respective states are on about the same proportion, except in Vermont where fewer bushes were destroyed per acre on the initial work. There is considerable variation in the per acre cost and man days values for the initial and re-eradication work in several of the states. For example, such averages for the re-eradication work in New Hampshire and New York are higher than those for the initial work in spite of the fact that fewer Ribes were found on the former class of work in these two states. This indicates that other factors such as topography, density of undergrowth, etc. have considerable weight in regulating the cost of control work.

Tables 8 and 9 show the results accomplished on Ribes eradication work under the Regular Cooperative Program during the period 1918-1941, inclusive. The low cost per acre for the work under this program may be attributed to the following factors. The best qualified men

available, other than owners' labor, could be selected and usually these men were accustomed to woods work and experienced in blister rust control. These workers spent eight hours per day in the field whereas on some of the control activities under the Emergency Programs (C.C.C. and S.C.S. during the period 1933-1938, inclusive) eight hours per man day was charged against the project, but this included time spent traveling to and from work and the lunch hour. A considerable portion of the work under the Regular Program has been performed by experienced scouts and three-man crews in scout formation rather than standard size crews as was necessary under the Emergency Programs. Also many of the Ribes concentrations were not worked until the advent of the Emergency activities.

Prior to 1924, no record was kept of man days for the Ribes eradication work under the Regular Program. In this report, the man days data for the period 1918-1925 were compiled for each state by dividing the total cost of the Ribes eradication work by an arbitrary daily wage rate of \$3.20.



Table 7 - Summary of 1941 Ribes Eradication Work Under Regular Cooperative Program in Northeastern States, 1941

State	Type of Erad.	Acreage		Ribes Felled		Total Man Days	Per Acre			
		Total Worked	Pine Protected	Wild	Cult.		Total Cost	Cost	Ribes	Man Day
Maine	Initial	4,223	1,791	56,264	39	508	1,157.32	.416	13.3	.13
	Re-Erad.	15,400	5,507	103,333	153	1,563	5,439.35	.355	6.7	.10
	Total	19,623	7,298	160,147	191	2,074	7,197.27	.337	8.2	.11
N. H.	Initial	6,643	4,225	124,610	-	750	2,393.74	.436	18.7	.11
	Re-Erad.	19,970	12,025	163,778	39	2,388	9,651.61	.435	3.2	.13
	Total	26,613	16,250	288,388	39	3,438	12,548.35	.471	10.8	.13
Vt.	Initial	3,930	932	6,357	15	247	991.75	.252	1.7	.08
	Re-Erad.	1,768	338	5,736	-	67	279.38	.153	3.3	.02
	Total	5,698	1,270	12,643	15	314	1,271.13	.223	2.2	.05
Mass.	Initial	3,876	1,633	30,531	-	327	1,560.33	.403	7.9	.03
	Re-Erad.	3,935	1,411	6,551	-	175	753.65	.193	1.7	.04
	Total	7,811	3,044	37,082	-	502	2,313.98	.297	4.7	.03
Conn.	All Re-Erad.	45,257	6,510	26,735	43	400	1,164.17	.043	0.6	.01
N. Y.	Initial	48,535	16,067	485,232	-	3,036	13,554.23	.279	10.0	.06
	Re-Erad.	66,932	32,433	335,846	355	5,008	21,042.41	.314	5.8	.07
	Total	115,527	38,500	871,098	721	8,044	34,596.64	.299	7.5	.07
Totals	Initial	67,272	24,648	703,514	417	4,366	20,760.37	.309	10.5	.07
	Re-Erad.	153,232	48,260	692,579	592	9,966	35,133.07	.257	4.5	.07
	Total	220,534	72,908	1,396,093	1,009	14,332	62,093.44	.278	6.3	.07

Basis of Costs: Includes actual cost or value of owners' labor usually figured at 40 cents per hour; actual cost of other laborers, scouts and crew foremen when engaged in locating and pulling Ribes; cost of crew transportation and miscellaneous expenses for trail, gas, picks, etc.

#### Recapitulation of Total Cost of 1941 Ribes Eradication Work Under Regular Cooperative Program

State	Type of Erad.	Individuals	Towns	Counties	State	B. F. and P. Q. *	Total
Maine	Initial	-	1,110.75	-	338.66	307.91	1,757.32
	Re-Erad.	54.00	2,910.42	-	667.14	1,803.39	5,439.35
	Total	54.00	4,021.17	-	1,005.80	2,116.30	7,197.27
N. H.	Initial	174.34	1,744.08	-	491.67	436.65	2,393.74
	Re-Erad.	224.72	6,775.31	-	1,809.83	341.75	9,651.61
	Total	399.06	8,519.39	-	2,301.50	1,328.40	12,548.35
Vt.	Initial	671.72	-	-	53.55	261.48	991.75
	Re-Erad.	192.36	-	-	21.10	62.92	279.38
	Total	864.08	-	-	82.65	324.40	1,271.13
Mass.	Initial	-	1,176.48	-	53.15	327.70	1,560.33
	Re-Erad.	-	-	-	204.95	473.60	753.65
	Total	-	1,176.48	-	341.10	801.30	2,313.98
Conn.	All Re-Erad.	318.40	-	-	930.97	866.10	1,164.17
N. Y.	Initial	230.20	232.00	2,759.37	7,160.33	3,112.70	13,554.23
	Re-Erad.	1,361.32	38.40	5,332.33	11,035.07	2,919.30	21,042.41
	Total	1,591.52	270.40	8,091.70	18,195.40	6,032.00	34,596.64
Totals	Initial	1,076.26	4,203.31	2,759.37	3,115.30	3,496.44	20,760.37
	Re-Erad.	2,150.80	9,724.13	5,332.33	12,841.70	3,971.00	35,133.07
	Total	3,227.06	13,927.44	8,091.70	22,077.09	11,267.44	62,093.44

\*See Table.



Table 2 - Summary of Ribes Eradication Work Performed Under  
Regular Cooperative Program in Northeastern States During  
Period 1918-1941, Inclusive  
(Excludes nursery sanitation and cultivated black currant elimination)

State	Type of Erad.	Total Acreage Worked	Ribes Pulled		Total Man Days	Total Cost	Per Acre		
			Wild	Cult.			Cost	Ribes	Man Days
Maine	Initial	1,760,817	20,463,140	118,895	77,799	248,900.07	.141	11.6	.04
	Re-Erad.	116,205	1,375,695	2,291	11,946	30,091.01	.328	11.8	.10
	Total	1,877,022	21,838,836	121,186	89,747	286,991.08	.153	11.6	.05
N. H.	Initial	2,788,595	39,024,483	141,650	187,010	600,412.60	.215	14.0	.07
	Re-Erad.	526,836	3,967,303	3,380	34,077	114,117.77	.217	7.5	.06
	Total	3,315,431	42,991,786	145,030	221,087	714,530.37	.216	13.0	.07
Vt.	Initial	197,088	2,177,302	10,313	26,718	35,765.90	.455	11.0	.14
	Re-Erad.	35,397	190,570	845	3,591	11,657.45	.329	5.4	.10
	Total	232,485	2,367,872	11,158	30,309	47,423.35	.419	10.2	.13
Conn.	Initial	1,789,972	13,097,841	236,526	87,322	332,514.28	.168	7.3	.05
	Re-Erad.	481,009	902,611	9,414	15,037	50,803.87	.106	1.9	.03
	Total	2,270,981	14,000,452	247,940	102,359	383,318.15	.147	6.2	.05
Mass.	Initial	273,179	190,069	12,201	9,428	30,165.64	.110	0.7	.03
	Re-Erad.	16,885	10,406	75	646	2,072.71	.123	0.6	.04
	Total	290,064	200,475	12,276	10,074	32,238.35	.111	0.7	.04
Rhode	Initial	230,930	1,611,203	18,576	16,760	53,634.65	.232	7.0	.07
	Re-Erad.	81,418	475,331	3,749	7,399	24,819.10	.305	5.8	.09
	Total	312,348	2,086,534	22,325	24,159	78,453.75	.251	6.7	.08
N. Y.	Initial	1,098,568	22,115,901	61,847	241,221	792,621.16	.722	20.1	.22
	Re-Erad.	290,805	1,740,970	4,170	23,753	90,530.12	.311	6.0	.08
	Total	1,389,373	23,856,871	66,017	264,974	883,151.28	.633	17.2	.19
Penn.	Initial	68,121	3,859,908	6,364	11,472	37,124.70	.545	56.7	.17
	Re-Erad.	16,162	644,328	32	4,488	15,035.90	.933	39.9	.28
	Total	84,283	4,504,236	6,396	15,960	52,210.60	.619	53.4	.19
Total	Initial	8,207,270	102,539,847	608,552	658,230	2,131,139.00	.260	12.5	.08
	Re-Erad.	1,564,717	9,307,215	24,456	100,939	347,177.93	.222	5.9	.06
	Total	9,771,987	111,847,062	633,008	759,169	2,478,316.93	.254	11.4	.08

Basis of costs: See Page 21.

Note: Acreage of initial eradication in Maine adjusted by deducting 1,017,911 acres which represents eliminated area that was included in acreage figures reported for years 1921-1930, inclusive, when the control work was performed on the owner-labor and scouting basis. These areas were non-pine land outside the control area.



Table 9 - Recapitulation of Total Cost of Ribes Eradication Work  
Under Regular Cooperative Program in Northeastern States  
During Period 1918-1941, Inclusive.

State	Type of Erad.	Individuals	Towns	Counties	State	B.P.I.	B.E. and P.Q.	W.P.A.	Forest Service	Park Service	Total
Maine	Initial	79,876.20	91,492.59	-	30,578.22	38,880.10	507.91	10.47	-	8,345.55	248,900.00
	Re-Erad.	2,632.92	24,749.03	-	7,850.45	687.42	1,808.59	21.56	141.25	-	39,041.00
	Total	82,509.12	116,241.61	-	38,428.67	39,567.52	2,316.50	38.03	141,258,345.55	288,941.00	
N. H.	Initial	41,463.21	345,414.59	-	152,115.90	59,460.63	685.65	-	1,471.62	-	600,447.00
	Re-Erad.	6,568.03	81,450.15	-	24,782.59	-	941.75	-	495.20	-	114,117.00
	Total	48,031.24	426,864.74	-	176,898.49	59,460.63	1,328.40	-	1,966.82	-	714,564.00
Vt.	Initial	63,264.32	841.26	-	15,352.37	6,056.47	261.42	-	-	-	85,760.00
	Re-Erad.	10,031.79	256.05	-	1,205.41	90.65	62.92	-	-	-	11,667.00
	Total	73,296.11	1,097.31	-	16,557.78	6,147.12	324.34	-	-	-	97,427.00
Mass.	Initial	73,204.77	2,875.70	-	183,981.05	25,125.06	327.70	-	-	-	282,500.00
	Re-Erad.	18,575.30	-	-	30,700.45	991.87	530.65	-	-	-	50,208.00
	Total	91,780.07	2,875.70	-	214,681.50	25,106.93	858.35	-	-	-	332,708.00
N. J.	Initial	581.22	-	-	1,671.37	401.04	-	-	-	-	3,053.00
	Re-Erad.	5,790.52	8,019.90	-	21,064.21	10,522.73	-	-	-	-	32,910.00
	Total	6,371.74	8,019.90	-	22,735.58	10,923.77	-	-	-	-	34,963.00
Conn.	Initial	2,075.16	4,167.93	-	16,046.55	1,365.50	835.10	-	-	-	24,414.00
	Re-Erad.	7,864.48	12,167.85	-	47,944.84	9,591.44	665.10	-	-	-	78,663.00
	Total	9,939.64	16,335.78	-	63,991.39	10,956.94	1,500.20	-	-	-	103,077.00
N. Y.	Initial	161,891.52	232.00	29,941.17	480,593.31	110,914.83	3,112.70	-	-	-	792,000.00
	Re-Erad.	11,635.00	123.40	11,684.27	64,160.15	-	2,919.30	-	-	-	90,553.00
	Total	173,526.52	355.40	41,625.44	544,753.46	116,914.06	6,032.00	-	-	-	882,553.00
Penn.	Initial	1,339.40	-	-	33,950.15	1,227.56	-	-	501.71	-	37,159.00
	Re-Erad.	18.80	-	-	14,719.55	75.49	-	-	372.00	-	15,086.00
	Total	1,458.20	-	-	48,669.70	1,283.05	-	-	873.71	-	52,245.00
Totals	Initial	427,428.19	248,876.01	29,941.17	947,867.45	262,134.41	9,436.44	16.47	1,970,258,345.55	2,161,139.00	
	Re-Erad.	51,569.44	110,715.21	11,684.27	161,145.83	4,102.00	7,034.11	21.56	203.51	-	347,177.00
	Total	479,001.63	359,591.22	41,625.44	1,109,013.28	266,236.41	16,470.55	38.03	2,167,848,348.55	2,478,316.00	



Federal Projects on Government Lands - Regular Cooperative Program

Control measures have been applied to most of the important white pine areas on the National Forests and Parks in the Northeastern States. Up to 1933, such activities were conducted as regular federal projects, the Bureau of Plant Industry cooperating with the National Park and Forest Services. With the exception of small projects on the Allegheny National Forest in 1933 and the White Mountain National Forest during 1939, all control work on Government-owned lands in this Region since 1933 has been performed under the C.C.C. Program. However, no Ribes eradication work was done on such lands during 1940 and 1941.

The project at Acadia National Park was begun in 1929 and continued each succeeding year except 1938, 1940 and 1941. All control work on this Park subsequent to 1932 has been performed by C.C.C. personnel. The initial control work has been completed on all Park areas, except one small tract of 48 acres which will be examined in 1942. About a third of the total control area has also been re-worked since 1933. Two experienced blister rust scouts were employed by the National Park Service during the period July 28 to October 11, 1941 on a pre-eradication survey of areas initially protected more than five years ago to determine the need for re-eradication. Post checks were made in areas aggregating 7,645 acres, and the results indicated that only three small areas totalling 551 acres were now in need of Ribes eradication. A special report of this project at Acadia National Park was submitted on April 2, 1942.

With the possible exception of recent acquisitions, all important white pine areas on the White Mountain National Forest in New Hampshire and Maine have been given initial protection. Control work on this forest was conducted as a regular federal project during the period 1924-1931, inclusive, while C.C.C. crews were used in 1933, 1934, 1935, 1938 and 1939. The 1939 C.C.C. work was supplemented by a small project financed by regular Forest Service funds. Recommendations have been submitted for a survey of all control areas on the White Mountain National Forest during the fiscal year 1944 which would include the preparation of a map showing the location of all white pine areas and the bounds of the protection zones. Some initial control work may be needed in recent acquisitions. In addition, it is proposed that a post-check be made of all 1924-1939 control areas to determine if re-eradication work is needed on any of these tracts.

Control work was started on the Allegheny National Forest in 1929 and was continued as a regular federal project during 1931 and 1933. C.C.C. crews were used on Ribes eradication work on this forest during the period 1933-1936, inclusive, but no protection work has been done since 1936. A general survey made in 1936 indicated there were 1,586 acres still in need of initial control work and according to information recently obtained from the local Forest Service officials there are several thousand additional acres in areas recently acquired by the Government where protection measures will be required. Some work may be performed on this forest during 1942 and recommendations have been submitted for the fiscal year 1944.



**Table 10 - Summary of Ribes Eradication Work on Federal Lands in Connection With Regular Cooperative Program, 1924-1941, Inclusive**  
(Data included in preceding summaries of control work under Regular Cooperative Program)

Project	Type of Erad.	Total Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre			
			Wild	Cult.		R.F.I.	State	Forest Service		Park Service	Total	Cost
Adirondack National Park	All Initial	7,726	503,920	-	2,728	3,145.23	-	-	8,345.53	11,491.53	1.49	65.2
White Mt. National Forest, Maine	All Re-Erad.	85	3,754	-	47	-	-	141.25	-	141.25	1.66	14.3
White Mt. National Forest, N.H.	Initial	6,779	182,493	-	554	75.63	224.11	1,471.62	-	1,771.36	.261	36.9
	Re-Erad.	5,094	10,803	-	189	-	133.50	495.20	-	628.70	.123	2.1
	Total	11,873	193,296	-	723	75.63	357.61	1,966.82	-	2,400.05	.209	16.8
Sub-Totals	Initial	6,779	182,493	-	554	75.63	224.11	1,471.62	-	1,771.36	.261	36.9
White Mt. National Forest	Re-Erad.	5,179	14,557	-	318	-	133.50	636.45	-	722.95	.149	2.3
	Total	11,958	197,050	-	770	75.63	357.61	2,108.07	-	2,541.51	.213	16.5
Allegheny National Forest, Penna.	Initial	391	123,019	8	194	133.56	-	507.71	-	644.37	.723	144.8
	Re-Erad.	627	19,393	-	106	71.29	-	272.06	-	343.35	.546	31.2
	Total	1,018	142,012	8	300	207.85	-	779.77	-	987.62	.651	98.2
Totals	Initial	15,398	815,432	8	3,546	3,358.02	224.11	1,979.33	8,345.53	13,906.99	.203	53.0
	Re-Erad.	5,606	34,550	-	322	71.29	133.50	308.51	-	1,113.30	.192	5.9
	Total	21,004	849,982	8	3,868	3,429.31	357.61	2,887.84	8,345.53	15,020.29	.700	40.1

Basic of costs: See page 21.

The control work performed on federal lands under the C.C.C. Program during the period 1933-1941, inclusive, is summarized in Table 28, and the results of all work on such areas under the Regular and C.C.C. Programs are given in Table 27.

Supervision of Ribes Eradication During 1941 - Regular Cooperative Program

In Maine, New Hampshire and New York, several state employees assisted the district blister rust control leaders in supervising the 1941 Ribes eradication work under the Regular Cooperative Program. One Lea employee in New York was also used on supervisory work for a few days. The cost of the supervisors' time is charged to the project "Eradication Assistants and Checkers" in this report.

Table 11 - Supervision of Ribes Eradication Work Performed  
Under Regular Cooperative Program in Northeastern States During 1941

State	No. Supervisors	Man Days Worked By Supervisors	Total Cost of Supervisors		
			State	B.E. & P.C. (Lea Funds)	Total
Maine	3	58	\$310.95	-	\$310.95
N. H.	3	112	575.60	-	575.60
N. Y.	18	714	4,191.51	\$20.00	4,211.51
Totals	24	879	5,078.06	20.00	5,098.06

The three state supervisors in Maine and eight of the New York men also assisted in supervising Ribes eradication work under the W.P.A. Program, the cost of their time being apportioned to each program.



## Nursery Sanitation - Regular Cooperative Program

Nursery sanitation work under the Regular Cooperative Program in the Northeastern States during 1941 was restricted to Connecticut, New York and Pennsylvania where the environs of 12 nurseries were examined for Ribes. Initial work was performed on 309 acres around two nurseries in Connecticut (Sun Valley and Great Pond) while 5,527 acres were re-examined for Ribes in protecting the pines in 10 other nurseries in Connecticut, New York and Pennsylvania. The work in Pennsylvania was performed by the state leader and a nominal charge was made for his time on such activities. As indicated in Table 12, very few Ribes were found on the re-eradication projects and the cost of such work amounted to only 6.8 cents per acre.

Tables 13 and 14 summarize the results of all nursery sanitation work in the Region, by states and years, during the period 1930-1941, inclusive. Prior to 1930, the results of such activities were included in the regular Ribes eradication summaries.

**Table 12 Summary of Nursery Sanitation Work under Regular Cooperative Program in Northeastern States During 1941**

State	Type of Erad.	No. Nurseries Worked	Acres Examined	Ribes Pulled		Total Man Days	Cost				Per Acre	
				Wild	Cult.		Indiv.	State	B.F.S. P.S.	Total	Cost	Man.
Conn.	Initial	2	309	10,685	13	19	34.52	58.93	-	93.55	.503	34.5
	Re-Erad.	5	1712	195	-	15	8.00	-	134.72	142.72	.095	0.1
	Total	7	2021	10,880	13	34	42.52	58.93	134.72	236.07	.117	0.5
N.Y.	Re-Erad.	1	1600	553	-	55	-	197.00	-	197.00	.123	0.3
Penna	"	4	2215	3	-	3	-	-	36.14	36.14	.016	0.01
Totals	Initial	2	309	10,685	13	19	34.52	58.93	-	93.55	.503	34.5
	Re-Erad.	10	5527	751	-	70	8.00	197.00	170.86	375.86	.067	0.1
	Total	12	5836	11,436	13	89	42.52	255.93	170.86	469.21	.090	0.5

\* Includes \$60.30 Lea funds.

Basis of Costs: Includes wages of laborers, recruits and foreman while engaged in locating and eradicating Ribes in nursery sanitation areas - cost of crew transportation.



**Table 13 - Summary of Nursery Sanitation Work Under Regular Cooperative Program in Northeastern States, 1930-1941, Inclusive**

By States

State	Type of Examined	Ribes Pulled		Total Man Days	Cost						Per Acre	
		Wild	Cult.		Indiv.	Towns	State	B.P.I.	Total	Cost	Ribes	Man Days
Maine	Initial	206	103,516	22	163	324.45	-	198.20	522.65	2.54	502.5	.79
	Re-Exam.	272	8,875	-	74	-	156.18	82.27	238.45	.877	32.6	.27
	Total	478	112,389	22	237	324.45	156.18	280.47	761.10	1.59	235.1	.50
	Initial	-	-	-	-	-	-	-	-	-	-	-
New Hampshire	Re-Exam.	2,256	7,648	-	152	172.28	-	337.31	509.49	.226	3.4	.07
	Total	2,256	7,648	-	152	172.28	-	337.31	509.49	.226	3.4	.07
	Initial	-	-	-	-	-	-	-	-	-	-	-
	Re-Exam.	-	-	-	-	-	-	-	-	-	-	-
Vermont	Initial	-	-	-	-	-	-	-	-	-	-	-
	Re-Exam.	1,150	5,082	-	160	-	516.01	-	516.01	.449	2.7	.14
	Total	1,150	5,082	-	160	-	516.01	-	516.01	.449	2.7	.14
	Initial	682	7,567	112	85	110.05	-	212.79	332.84	.488	11.1	.13
Massachusetts	Re-Exam.	5,626	16,668	179	708	89.20	-	2,962.84	3,072.04	.527	2.9	.12
	Total	6,510	24,235	291	793	199.25	-	3,185.63	3,404.88	.523	3.7	.12
	Initial	1,180	133	520	158	-	-	542.55	162.37	.426	0.1	.13
	Re-Exam.	4,563	4,622	165	110	-	-	749.62	749.62	.164	1.0	.02
Rhode Island	Total	5,753	4,755	268	268	-	-	1,032.18	162.37	.114	0.8	.05
	Initial	6,893	16,037	115	234	238.84	-	404.52	133.57	.783	2.3	.05
	Re-Exam.	42,381	6,260	874	1,262	565.04	-	3,557.04	*745.69	.115	0.1	.03
	Total	49,277	22,297	989	1,496	803.88	-	3,962.16	685.51	.115	0.5	.03
Connecticut	Initial	8,110	26,017	634	332	5.60	-	1,219.33	-	.394	8.4	.13
	Re-Exam.	60,772	93,231	1,153	5,867	246.57	-	12,566.63	-	.211	1.6	.03
	Total	68,882	122,248	1,787	4,249	252.17	-	13,785.93	-	.219	1.9	.07
	Initial	600	462	49	7	-	-	22.20	-	.032	0.8	.01
New Jersey	Re-Exam.	610	569	-	8	-	-	31.47	22.59	.038	0.9	.01
	Total	1,210	1,031	49	15	-	-	53.67	22.50	.065	0.9	.01
	Initial	4,115	35,920	491	261½	235.30	-	593.43	33.60	.209	8.7	.06
	Re-Exam.	16,110	28,328	43	1,206	37.15	-	3,562.44	** 36.14	.227	1.8	.07
Pennsylvania	Total	20,225	64,248	534	1,467½	272.45	-	4,170.87	72.74	.223	3.2	.07
	Initial	16,799	139,652	1,943	1,290½	914.24	-	2,989.65	343.59	.253	11.3	.08
	Re-Exam.	135,942	172,281	2,417	7,547	1,110.24	156.18	24,363.13	304.33	.196	1.3	.06
	Total	150,741	351,933	4,360	8,837½	2,024.48	156.18	27,375.70	1,153.62	.204	2.4	.06

\* Includes 9134.72 B.P.I. and P.O. funds

\*\* 2.3, and P.O. funds



**Table 14** Summary of Nursery Sanitation Work Under Regular Cooperative Program  
in Northeastern States, 1930-1941, Inclusive.

By Years

Year	Type of Erad.	Acreage Examined	Ribes Pulled		Total Man Days	Cost			Per Acre			
			Wild	Cult.		Indiv.	Towns	State		B.P.I.		
1930	Initial	4,975	110,704	182	447	524.77	-	905.19	-	1,433.96	.288	22.3
	Re-Erad.	30,752	59,542	645	1,420	563.89	-	4,193.53	-	4,757.22	.230	2.9
	Total	25,725	170,246	825	1,937	1,097.66	-	5,103.52	-	5,201.18	.241	6.6
1931	Initial	3,048	6,117	55	120	5.60	-	240.36	139.92	585.28	.227	2.0
	Re-Erad.	26,776	26,126	1,036	1,671	117.69	-	4,863.42	372.50	5,355.61	.200	1.0
	Total	29,824	32,243	1,141	1,791	123.29	-	5,103.78	512.42	5,739.49	.192	1.1
1932	Initial	4,759	16,478	1,222	565	50.65	-	1,588.32	172.87	1,811.84	.581	3.5
	Re-Erad.	12,903	12,543	60	1,247	165.51	7.73	3,828.15	5.33	3,996.72	.310	1.0
	Total	17,662	29,021	1,282	1,812	206.16	7.73	5,416.47	178.20	5,803.56	.329	1.6
1933	Initial	1,490	19,102	32	67	59.40	-	196.95	36.80	233.15	.197	12.3
	Re-Erad.	13,535	53,280	538	1,297	133.50	148.45	4,608.74	235.54	5,198.23	.293	1.3
	Total	15,025	52,382	400	1,334	242.90	148.45	4,805.69	282.34	5,299.53	.277	2.0
1934	Initial	1,682	34,953	94	45	136.80	-	-	-	136.80	.117	14.2
	Re-Erad.	7,101	7,465	-	247	-	-	907.09	-	907.09	.123	1.0
	Total	8,783	42,418	94	292	136.80	-	907.00	-	1,007.00	.123	3.9
1935	Initial	166	1,605	320	27	16.90	-	-	-	16.90	.217	10.9
	Re-Erad.	11,374	6,543	145	367	34.75	-	1,173.73	-	1,213.53	.107	0.6
	Total	11,540	7,150	403	394	31.65	-	1,173.73	-	1,230.43	.109	0.6
1936	All Erad.	3,166	6,194	20	346	-	-	1,333.62	-	1,333.62	.349	1.7
	Initial	390	0	25	1	1.60	-	-	-	1.60	.024	0.1
	Re-Erad.	10,600	6,506	43	325	41.92	-	1,337.32	-	1,379.53	.174	0.3
1937	Initial	14,652	0,629	81	324	48.50	-	1,267.65	-	1,317.15	.120	0.3
	All Erad.	2,430	5,999	9	237	-	-	1,085.73	-	1,085.73	.129	0.7
	Total	17,082	6,628	90	561	-	-	2,353.38	-	2,402.88	.249	1.0
1938	Initial	5,537	753	10	105	-	-	600.35	-	600.35	.120	1.6
	All Erad.	3,390	162	-	117	-	-	364.32	-	364.32	.107	0.05
	Total	8,927	915	10	222	32.53	-	964.67	-	964.67	.109	2.1
1941	Re-Erad.	5,537	753	-	10	8.00	-	197.00	170.00	275.00	.029	0.1
	Total	5,836	11,416	10	85	42.52	-	255.25	170.00	425.25	.060	0.3
	Initial	18,730	130,852	1,940	1,930	914.31	-	2,929.36	343.62	3,272.97	.253	11.3
Totals	Re-Erad.	130,941	177,191	6,317	1,617	1,110.20	170.16	64,883.15	604.23	65,487.38	.203	2.3
	Total	150,767	308,043	8,257	3,547	2,024.51	185.16	71,812.51	1,137.85	72,950.36	.229	13.6

Scale of Cost: See Page 27.



Ribes Nigrum Elimination - Regular Cooperative Program

No special *Ribes nigrum* elimination work was conducted in the Northeastern States during 1941, but such bushes were destroyed in connection with the work of eradicating wild *Ribes* and other cultivated bushes.

Table 15 summarizes the results of all special *Ribes nigrum* elimination work performed under the Regular Cooperative Program prior to 1941. The status of such activities in the four states where the work has been conducted as a special project is shown in Table 103, while the results for all years, by programs and states, are summarized in Tables 101 and 102.

Table 15. Special Black Current Elimination Work Under the Regular Cooperative Program in Northeastern States, 1918-1941, Inclusive

No. Properties Inspected	No. Patches Ribes Located	No. Ribes Pulled			Total Man Days	Cost				
		Nigrum	Other Cult.	Total		Indiv.	State.	B.P.I.	P.W.A.	Total
395,305	4,494	52,115	-	52,115	5,552 $\frac{1}{2}$	2351.80	20,576.44	100.00	-	23028.24
110,137	1,217	16,219	1,035	17,312	1,229	-	9,178.55	675.53	473.80	10327.88
55,380	2,713	354	18,698	19,050	1,533	-	2,509.33	3647.42	912.26	7069.01
522,476	5,103	36,836	761	37,697	5,140 $\frac{1}{2}$	-	27,302.22	-	-	27302.22
1,032,378	14,227	85,624	20,550	106,174	14,155	2351.80	59,566.54	4422.95	1386.06	67727.35

Basis of Costs: Includes cost of laborers, scouts, and foremen while engaged in locating and destroying *Ribes nigrum* and other cultivated bushes as indicated - owners' labor figured at rate of 40 cents per hour.



Blister Rust Canker Elimination Work - Regular Cooperative Program

During 1941, two land owners in Maine and one individual in Vermont paid the wages of laborers engaged in cutting out blister rust cankers from white pines on their properties. The state also paid a small portion of the costs of the work in Vermont. These programs were supervised technically by the respective district leaders. Tables 16 and 17 summarize the results accomplished in 1941 and during the period 1932-1941, inclusive.

Most of the canker elimination work in this Region has been performed on public land in connection with the Emergency Program. Such activities under the Regular Cooperative Program prior to 1941 were restricted to the 1932 project at Acadia National Park in Maine and a few instances where private land owners in Maine and Vermont paid all of the costs of the work on their properties.

**Table 16 - Blister Rust Canker Elimination Work Conducted Under Regular Cooperative Program in Northeastern States During 1941**

State		Maine	Vermont	Totals
Est. no. pines examined		217	845	1,062
No. fatally infected pines cut down		5	17	22
No. pines from which cankers removed		87	36	123
No. cankers removed	Branch	232	21	253
	Stem	18	15	33
Total man days		61	4	65
Cost	Individuals	\$212.52	\$12.50	\$225.02
	State	-	4.40	4.40
	Total	\$212.52	\$16.90	\$229.42

Basis of costs: - Includes wages of laborers and foremen, employed by the land owners while engaged on canker elimination work.

**Table 17 - Blister Rust Canker Elimination Work Conducted Under Regular Cooperative Program in Northeastern States, 1932-1941, Inclusive.**

State		Maine	Vermont	Totals
Est. no pines examined		97,748	18,893	116,641
No. fatally infected pines cut down		8,267	1,412	9,679
No. pines from which cankers removed		12,304	1,664	14,000
No. cankers removed	Branch	19,512	2,750	22,262
	Stem	1,923	225	2,148
Total man days		811	167	978
Cost	Individuals	\$2,425.30	\$428.52	\$2,853.82
	Town	-	50.00	50.00
	State	31.65	10.40	42.05
	Nat'l Park Service	321.04	-	321.04
	Total	\$2,778.05	\$488.92	\$3,266.97

Basis of costs: - Includes wages of laborers and foremen (employed by land owners, town, and National Park Service) while engaged on blister rust canker elimination work. cost of equipment purchased by National Park Service.



Table 17 includes the results of the 1932 work at Acadia National Park in Maine when 2,546 pines were examined and 319 fatally infected trees cut down. In addition, 1,480 branch cankers and 61 stem infections were removed from 715 other infected pines. This 1932 project at Acadia National Park required 100 days labor and the total cost of the work was \$321.04 to the National Park Service. C.C.C. laborers were used on similar activities at Acadia National Park during the period 1933-1939, inclusive - See Table 31 for the results of this C.C.C. work.

In addition to the canker elimination work reported in Table 17, the ornamental pines on the state reservation at Saratoga, New York were examined by state employees for blister rust infection during 1933. The area contained 75 acres of plantations about 20 years old. There was also considerable natural white pine scattered over some 700 acres of woodlands. The pines had been previously pruned to a height of 6 feet which aided materially in inspecting them for infection. The work disclosed a total of 113 diseased trees, 49 of which had died from blister rust. These dead trees were cut down, and limb infections were also removed from 64 other pines. No time or cost figures are available for this work.

#### Pine and Control Area Mapping - Regular Cooperative Program

Pre-eradication survey work under the Regular Cooperative Program during 1941 was restricted to New York where a few state employees were assigned to such activities for 383 man days. These men mapped 47,655 acres in detail and definitely eliminated an additional 343,845 acres due to lack of sufficient white pine to justify the cost of control measures. The total cost of this 1941 mapping in New York was \$2,199.29 all of which was paid from state funds.

Prior to 1941, pine and control area mapping had been conducted under the Regular Cooperative Program in four states. The results of such pre-eradication survey work for all years are summarized in Table 18.

Table 18 - Pine and Control Area Mapping Under The Regular Cooperative Program in Northeastern States During Period 1933-1941, Inclusive

State	Period Work Performed	Acreage Mapped	Acreage Examined But Not Mapped	Total Man Days	Total Cost (All State)
Maine	1933 and 1935	21,976	35,055	164	\$625.93
N. H.	1935	18,538	-	311	1,244.00
Conn.	1934	120	1,600	7	35.00
N. Y.	1934 - 1941	401,161	542,350	1,990	8,940.11
Totals	-	441,595	580,005	2,412	11,845.09



**Table 19 - Total Expenditures, By Cooperating Agencies, Under The Regular Cooperative Program  
in Northeastern States During 1941**

State	State Funds	Towns	Indiv.	Counties	B.E. and P.Q. Funds		Park Service	Total
					Regular	Lea		
Maine	5,503.27	4,021.17	266.52	-	13,819.75	3,199.60	666.00	25,476.51
N. H.	4,386.67	8,519.39	399.06	-	15,298.08	1,938.38	-	30,541.58
Vt.	1,556.03	-	876.58	-	8,301.06	324.40	-	11,058.14
Mass.	668.16	1,176.48	-	-	14,490.52	1,884.60	-	18,219.76
R. I.	2,901.14	-	-	-	1,191.63	-	-	4,092.77
Conn.	3,892.63	-	360.92	-	5,854.41	925.40	-	11,033.36
N. Y.	25,021.17	270.40	1,591.52	8,437.35	14,829.52	7,351.96	-	57,501.72
Penna.	878.00	-	4.45	-	9,454.23	-	-	10,316.68
Totals	42,807.12	15,987.44	3,499.05	8,437.35	83,219.02	15,624.34	666.00	168,240.32

**Table 20 - Total Cooperative Expenditures, By Projects, Under Regular Cooperative Program  
in Northeastern States During 1941**

State	Supervision and RQC Agent Activities	Ribos Eradication	Eradication Assistants and Checkers	Nursery Sanitation	Ribos Compen-sation	Plaster Rust Canker Elimination	Field Data		Total
							Mapping	General	
Maine	17,039.57	7,197.27	320.95	-	-	212.52	-	666.00	25,476.51
N. H.	17,537.63	12,548.35	575.60	-	-	-	-	80.00	30,541.58
Vt.	9,770.11	1,271.13	-	-	-	16.00	-	-	11,058.14
Mass.	15,900.83	2,318.83	-	-	-	-	-	-	18,219.76
R. I.	4,092.77	-	-	-	-	-	-	-	4,092.77
Conn.	8,552.22	2,164.17	-	256.07	-	-	-	78.90	11,033.36
N. Y.	15,129.28	34,596.64	4,211.51	197.00	-	-	2,199.29	168.00	57,501.72
Penna.	10,275.09	-	-	36.14	4.45	-	-	-	10,316.68
Totals	99,150.55	60,093.44	5,098.06	469.21	4.45	229.42	2,199.29	992.90	168,240.32

Table 21 - Lea Funds For Blister Rust Control in Northeastern States  
(Appropriation 3103.14)

Allotments For Fiscal Year 1942

State	Original Allotments	Supplemental Allotments To Cover Salary Promotions	Total Allotments
Maine.....	\$ 4,259.00	0	4,259.00
New Hampshire.....	4,509.00	24.96	4,532.96
Vermont.....	1,228.00	16.64	1,244.64
Massachusetts.....	2,747.00	0	2,747.00
Rhode Island.....	534.00 *	0	534.00
Connecticut.....	1,935.00	0	1,935.00
New York.....	17,657.00	91.66	17,748.66
Total.....	\$32,868.00	133.26	33,001.26

\*This allotment was transferred to Maine on May 1, 1942

Expenditures From Lea Funds During Period July 1 to December 31, 1942

	Salaries of District Leaders	Wages of Laborers, Scouts and Foremen				Crew Transportation	Total
		Ribes Eradication	Nursery Sanitation	Erad. Assistant	Total		
Maine	\$1,083.30	\$2,116.30	-	-	\$2,116.30	-	\$3,199.60
New Hampshire	609.96	1,104.00	-	-	1,104.00	224.40	1,938.36
Vermont	-	324.40	-	-	324.40	-	324.40
Massachusetts	1,083.30	801.30	-	-	801.30	-	1,884.60
Connecticut	-	865.10	39.60	-	904.70	20.70	925.40
New York	1,299.96	6,032.00	-	20.00	6,052.00	-	7,351.96
Total	4,076.54	11,243.10	39.60	20.00	11,302.70	245.10	15,624.34



**Table 22 = Total Expenditures, By Cooperating Agencies, Under Regular Cooperative Program  
In Northeastern States, 1918-1941, Inclusive**

State	State Funds	Towns	Individuals	Counties	P.W.A. and W.P.A.	B.P.I.	B.E. & P.Q.		Park and Forest Service	Total
							Regular	Loa		
Maine	126,414.64	117,099.79	85,180.93	-	38.03	249,874.54	62,928.75	3,199.60	10,446.69**	655,182.00
N. H.	299,431.73	427,692.68	48,203.57	-	-	434,415.50	61,777.11	1,938.38	2,442.11	1,275,901.00
Vt.	57,918.36	1,127.91	73,860.88	-	-	119,313.44	41,138.43	324.40	-	293,082.00
Mass.	287,755.97	2,875.70	94,331.71	-	-	325,303.88	60,525.65	1,884.60	-	770,511.00
R. I.	68,378.94	-	581.36	-	473.80	43,883.83	4,467.67	-	-	117,785.00
Conn.	135,654.32	12,187.89	6,744.61	-	912.26	101,725.55	27,580.46	925.40	-	231,000.00
N. Y.	1,030,511.81	360.40	173,754.09	41,625.44	-	479,769.34	65,475.67	7,351.96	-	1,809,540.00
N. J.	15,700.94	-	-	-	-	6,271.28	2,920.10	-	-	24,891.00
Penn.	111,115.59	-	1,886.18	-	-	31,619.21	43,937.03	-	779.77	189,537.98
Totals	2,140,682.30	561,344.37	486,543.33	41,625.44	1,424.09	1,790,176.58	370,550.87	15,624.34	13,668.57	5,421,000.00

\*W.P.A. funds - other amounts in this column are P.W.A.

\*\*Includes \$10,305.44 by National Park Service.

**Table 23 = Total Cooperative Expenditures, By Projects, Under Regular Cooperative Program  
In Northeastern States, 1918-1941, Inclusive**

State	Supervision and PRC Agent Activities	Ribes Eradication	Eradication Assistants and Checkers	Black Current Elimination	Nursery Sanitation	Ribes Compensation	Blister Rust Control Elimination	Field Data		Total
								Mapping	General	
Maine	326,733.97	280,991.08	2,612.69	-	10,261.10 <sup>(1)</sup>	-	2,778.05	625.15	25,180.10	655,182.00
N. H.	378,763.02	714,530.37	32,761.00	-	509.49	550.60	-	1,244.00	46,540.54	1,376,595.00
Vt.	168,471.96	97,423.25	-	-	316.01	793.81	524.32	-	25,953.57	293,511.00
Mass.	347,048.17	333,518.15	-	25,028.24	3,919.73 <sup>(2)</sup>	14,547.10	-	-	48,816.12	770,077.00
R. I.	65,210.24	32,238.35	1,000.00	10,327.88	1,255.05	509.79	-	-	9,242.69	117,006.00
Conn.	150,034.11	78,453.75	475.06	7,069.01	5,651.55	103.50	-	35.00	45,703.52	287,000.00
N. Y.	480,919.87	833,151.23	97,194.54	27,302.22	14,018.75	5,587.99	-	9,940.11	288,533.53	1,809,540.00
N. J.	20,032.71	-	-	-	300.53 <sup>(3)</sup>	-	-	-	4,559.00	24,591.00
Penn.	117,448.23	52,210.60	2,617.70	-	516.26	167.45	-	-	12,587.57	189,537.98
Totals	2,151,462.61	2,478,316.93	136,664.05	67,727.35	40,949.47	22,249.34	5,502.97	11,345.09	507,122.08	5,421,000.00

- (1) Includes \$2,500.00 (charge of \$500.00 per year) for nursery inspection work from 1918-1936, inclusive.
- (2) Includes \$611.86 for special nursery inspection work during 1933-1934.
- (3) Includes \$341.36 for special nursery inspection work during 1935-1936.



REPORT ON CONTROL ACTIVITIES UNDER THE  
C.C.C. PROGRAM IN THE NORTHEASTERN STATES

Control activities under the C.C.C. Program in this Region during the period 1935-1941, inclusive, have resulted in 2,580,163 acres being cleared of 66,451,064 wild Ribes and 93,394 cultivated bushes. Such activities required 1,157,504 man days labor exclusive of the time of the supervisory personnel. Approximately 54% of the total acreage examined was initial control work. In addition to the Ribes eradication projects, many C.C.C. employees have also been available for other phases of control work such as nursery sanitation, pre-eradication surveys, and blister rust canker elimination.

Compared with previous years' accomplishments, there was a drastic reduction in the volume of control work under the C.C.C. Program during 1941 primarily due to the closing of numerous camps especially after June 30th. Although an average of 906 enlisted men from 50 camps were assigned to Ribes eradication work during the 1941 season, as compared with 123 camps and 1361 enlisted men the previous year, there was a decrease of 60% in the number of C.C.C. man days labor available for control work in 1941. There was also a corresponding decrease of 64.5% in the total acreage worked by the C.C.C. personnel during 1941 when 55,947 acres were cleared of 822,224 wild and 820 cultivated Ribes. All of the 1941 control work was performed on state and privately-owned lands, as no C.C.C. labor was available for such activities from the camps at Acadia National Park and the two National Forests in the Region.

Pennsylvania was the only state where C.C.C. employees were available for other phases of control work during 1941. In that state, 14 C.C.C. employees, including two checkers, were assigned to pre-eradication survey work part time during the period January 1 to August 31, inclusive.

#### Responsibilities and Direction of Work

The 1941 Ribes eradication work was directly supervised by 71 C.C.C. technical foremen and checkers. A few experienced state foremen also assisted on the C.C.C. projects in Massachusetts, Connecticut and New York. In New England and New York, the blister rust control leaders gave technical supervision to the C.C.C. projects by selecting the areas to be protected, assisting in training the personnel in proper methods of control, and checking the work to make sure desired results were obtained. Such technical supervision in Pennsylvania was furnished by two full-time C.C.C. checkers under the direction of the state blister rust control leader. However, the services of these two checkers in Pennsylvania were terminated on August 31, 1941.

#### Distribution of Work and Personnel Employed

As indicated in Table 24, an average of 906 enlisted men from 50 C.C.C. camps were assigned to Ribes eradication work conducted in 93 townships during the 1941 season. All but eight of the camps operating control projects were located in New York and Pennsylvania. No C.C.C. personnel was available for control work in New Hampshire for the first time since the program was inaugurated in 1933, while in the other New England States only a few C.C.C. employees were assigned to Ribes eradication work for relatively short periods. For example, in Massachusetts seven enlisted men from one camp were available for only 79 man days during the season. In Maine, only 268 man days labor was obtained from one camp, while similar conditions prevailed in Vermont where one camp furnished 386 man days labor for Ribes eradication work.



Table 24 - Distribution of Work and Personnel Assigned on C.C.C. Ribes Eradication Projects in Northeastern States During 1941

State	No. C.C.C. Camps Where Control Work Performed	No. Towns Where Control Work Performed	Ave. Number Enlisted Men Assigned	Number Technical Foremen and Checkers
Maine	1	1	17	1
Vt.	1	1	21	1
Mass.	1	1	7	-
R. I.	2	4	30	2
Conn.	3	5	60	4
N. Y.	16	34	215	35
Penna.	36	47	355	56
Totals	50	93	500	71

Basis For Computing Costs and Man Days Data For C.C.C. Work

It is impossible to give accurate cost figures for the time of the enlisted men assigned to C.C.C. control activities. In compiling such cost data for this report, the wages of the enlisted men were figured at the rate of \$1.00 per day plus an arbitrary charge for subsistence computed at the rate of 35 cents per day in 1933, 40 cents in 1934, and 50 cents for the period 1935-1941 inclusive. Accurate data have been available for the wages and expenses of the technical foremen and checkers, and any state employees assigned to the C.C.C. work.

When actual transportation costs were not available for the C.C.C. projects, such expenses have been estimated either on the basis of \$40.00 per month for each truck plus 3 cents per mile for operating costs or at the rate of 12 cents per mile for each mile the truck was used on the project.

In computing man days data for the C.C.C. activities, the total time of the enlisted men (8 hours per day) was charged during the period 1933-1938, inclusive. This included time spent traveling to and from work and the lunch hour. During 1939 to 1941, inclusive, only the actual working time of the C.C.C. enlisted personnel was charged, and the man days data obtained by dividing the total working time by eight. On this basis, a much fairer comparison can be made of the C.C.C. man day accomplishments and similar values for work performed under other programs. In figuring the C.C.C. costs during 1939-1941, however, the enlisted men's total working time was divided by six, and \$1.50 charged for each six hour man day.



Accomplishments on Various Blister Rust Control  
Projects Under C.C.C. Program in Northeastern States

Ribes Eradication Work During 1941

A total of 55,947 acres in 93 townships were cleared of 322,224 wild Ribes and 330 cultivated bushes during 1941 as a result of 22,897 man days labor by the C.C.C. personnel and a few state employees who were assigned to the projects in three states. Of the total acreage examined, 17,906 acres, or 32.0%, was initial control work. The total acreage cleared of Ribes under the C.C.C. Program represents only 9.7% of the total acreage worked in the Region during 1941, as compared with 22.5% in 1940. Figured on the basis outlined on Page 37, the total cost of the 1941 C.C.C. Ribes eradication work, exclusive of supervision, amounted to \$50,714.33, or 90.6 cents per acre. This average cost was 12.3% higher than the preceding year, chiefly due to the fact that nearly 79% of all the 1941 work was in New York and Pennsylvania where the costs are normally higher due to various factors including number and size of bushes, topography, etc.

As indicated in Table 25, the average cost of all the 1941 Ribes eradication work under the C.C.C. Program in the various states ranged from 37.4 cents per acre in Massachusetts to \$2.13 per acre in Maine, while the average number of Ribes per acre ranged from 2.0 in Massachusetts to 18.9 in Maine. No satisfactory comparison can be made of the per acre values for the initial and re-eradication work in the respective states because the same areas are not involved. For example, the average cost of the re-eradication work in Pennsylvania is slightly higher than that for the initial work even though fewer bushes were found per acre on the areas re-worked. In each of the other states, the cost per acre for the two classes of work varies more in proportion to the number of Ribes. However, there is considerable variation in such per acre values in the various states. The per acre cost and man day values for the work in Maine are approximately three times higher than similar averages for Vermont and New York, whereas the average number of Ribes destroyed per acre on the C.C.C. work in each of these three states during 1941 was approximately the same. Experience has shown and the 1941 per acre values for the C.C.C. work indicate that the time required to do Ribes eradication work is dependent on many factors, such as: number, size, and distribution of Ribes; density of undergrowth; topography; and the experience, ability and efficiency of the personnel. For example, 175.5 percent more Ribes were found per acre on the areas initially protected than on those re-examined during 1941, but the average man days per acre for the initial eradication was only 26.3 percent greater.

Ribes Eradication Work From 1933 to 1941, Inclusive

Ribes eradication work under the C.C.C. Program in the Northeastern States during this period 1933 to 1941, inclusive, has resulted in 2,580,163 acres being cleared of 66,451,064 wild Ribes and 93,394 cultivated bushes. Such activities required 1,137,504 man days labor by the C.C.C. personnel and the state employees who assisted on the projects. Tables 26 and 27 summarize the results of the C.C.C. Ribes eradication work, by states, years and classes of work. The total acreage (2,580,163) cleared of Ribes under the C.C.C. Program represents 33.5 percent of all control work performed in the Region from 1933-1941, inclusive.



Due to the fact that only a nominal charge has been made for the enlisted men's time, the per acre cost of the C.C.C. Ribes eradication work has been comparable to the cost of similar work under the other Emergency Programs, but the average man days per acre on the C.C.C. work has been considerably higher which can be attributed to the following causes:

(1) The blister rust control leaders' activities in connection with the C.C.C. Program have been limited to technical supervision - instructing personnel as to where and how to do the necessary control work, and performing sufficient administrative checking to make sure the desired results were obtained. However, lack of full authority over the field men was a severe handicap in numerous instances. The amount and quality of the supervision provided by the C.C.C. technical foremen was also inadequate in some cases.

(2) Practically all of the control work has been performed by crews in strip formation. In many instances the areas undoubtedly could have been worked by scouts, but experienced men were not available. The necessity of emphasizing fundamentals of Ribes eradication work to a changing and inexperienced personnel (chiefly young men from cities with little or no experience in manual labor or woods work) frequently prevented refinements in crew methods to eliminate lost motion and to increase crew flexibility under varying field conditions.

(3) During the period 1933-1938, inclusive, eight hours per man day (including time consumed in travel and the lunch hour) was charged in computing the cost and man days spent on the Ribes eradication work. As only about six hours actual field work was performed per day on the C.C.C. projects as compared with eight hours for similar work under all other programs (except S.C.S.), there was a difference of 25% in productive C.C.C. time which should be considered in any comparison of results under the various programs. Since 1938 only the actual time spent on Ribes eradication work has been charged in computing the C.C.C. cost and man days data.

The graphs on Pages 43 and 44 depict the per acre values for all Ribes eradication work performed under the C.C.C. Program in the Northeastern States from 1933 to 1941, inclusive, by states and years. There has been little variation in the yearly per acre values, but a comparison of such values, by states, show a wide range in several instances. The low per acre man day figures for Rhode Island and Connecticut are due primarily to the small number and size of the bushes, and the topography encountered. On the other hand, the numerous large bushes and difficult terrain in many sections of New York and Pennsylvania account for the high per acre values for those two states. In the other New England States, the sites selected for the C.C.C. work usually represented difficulty factors above average. Many of the areas have contained heavy Ribes concentrations.



Table 25 - Ribes Eradication Work Performed Under C.C.C. Program in Northeastern States During 1941

(Excludes nursery sanitation and cultivated black currant elimination)

State	Type of Erad.	Acreage		No. Ribes Pulled		Total Man Days	State	Cost	Total	Cost	Per Acre	
		Total Worked	Pine Protected	Wild	Cult.						Ribes	Man Days
Maine	All Re-Erad	289	103	5,452	-	268	-	616.19	616.19	2.15	18.9	.93
	Initial	1,055	146	18,940	77	355	-	768.12	768.12	.728	18.0	.34
	Re-Erad.	152	42	1,562	-	31	-	68.17	68.17	.448	10.3	.20
	Total	1,207	188	20,502	77	386	-	836.29	836.29	.693	17.0	.32
Mass.	All Re-Erad	1,499	658	4,318	-	158	405.08	227.39	632.47	.422	2.9	.11
	Initial	62	33	3,976	-	35	-	86.58	86.58	1.40	48.0	.56
	Re-Erad.	4,732	2,964	6,678	148	739	-	1,728.37	1,728.37	.561	1.4	.15
	Total	4,854	3,002	9,654	148	774	-	1,814.95	1,814.95	.574	2.0	.16
R. I.	All Re-Erad	4,085	587	33,324	-	992	204.21	1,801.05	2,005.26	.491	8.2	.24
	Initial	7,331	2,986	233,878	99	3,243	161.09	6,998.64	7,159.73	.977	31.9	.44
	Re-Erad.	11,053	3,449	103,143	14	3,114	161.09	6,664.14	6,825.23	.617	9.3	.28
	Total	18,384	6,435	337,026	113	6,357	322.18	13,662.78	13,984.96	.761	18.3	.35
N. Y.	Initial	9,458	2,030	207,295	235	4,957	-	10,913.35	10,913.35	1.15	21.9	.52
	Re-Erad.	16,171	3,673	204,653	247	9,005	-	19,910.86	19,910.86	1.23	12.7	.36
	Total	25,629	5,753	411,948	482	13,962	-	30,824.21	30,824.21	1.20	16.1	.54
	Initial	17,906	5,230	463,039	411	8,590	161.09	18,766.69	18,927.78	1.06	25.9	.48
Penn.	Re-Erad.	38,041	11,476	359,135	409	14,307	770.38	31,016.17	31,786.55	.836	9.4	.38
	Total	55,947	16,706	822,224	820	22,897	931.47	49,782.86	50,714.33	.906	14.7	.41
	Initial	17,906	5,230	463,039	411	8,590	161.09	18,766.69	18,927.78	1.06	25.9	.48
	Re-Erad.	38,041	11,476	359,135	409	14,307	770.38	31,016.17	31,786.55	.836	9.4	.38
Totals	Total	55,947	16,706	822,224	820	22,897	931.47	49,782.86	50,714.33	.906	14.7	.41

Basis of costs: Includes wages of enlisted men figured at \$1.00 per six hour man day plus arbitrary charge of 50 cents per day for subsistence - cost of crew transportation figured on basis of \$40. per month for each truck plus 3 cents per mile for operating costs or at rate of 12 cents per mile for each mile truck was used on the project - and miscellaneous expenses for trail paper, picks, etc. Only actual working time of enlisted men included - man days data for Table 25 obtained by dividing actual working time by eight.



Table 26 - Ribes Eradication Work Performed Under C.C.C. Program in Northeastern States During Period 1933-1941, Inclusive

(Excludes nursery sanitation and cultivated black currant elimination)

By States

State	Type of Erad.	Total Acreage Worked	No. Ribes Pulled		Total Man Days	Cost		Per Acre	
			Wild	Cult.		State	C.C.C.	Cost	Ribes Pulled
Maine	Initial	221,261	2,220,206	8,415	96,160	-	158,672.94	158,672.94	717 41.2
	Re-Erad.	220,905	3,190,493	3,014	55,831	135.00	95,710.51	95,845.51	434 14.4
	Total	442,166	12,470,701	11,429	151,991	135.00	254,383.45	254,518.45	576 28.2
N. H.	Initial	83,054	5,951,212	453	47,900	81.80	76,060.01	76,161.01	917 71.7
	Re-Erad.	59,891	1,512,455	-	15,861	62.20	35,169.01	35,231.21	632 40.4
	Total	122,945	7,564,265	453	63,561	144.00	101,249.02	101,393.02	625 61.5
Vt.	Initial	63,480	2,763,033	931	28,697	-	48,179.10	48,179.10	759 43.6
	Re-Erad.	32,427	661,254	106	15,090	-	24,203.31	24,203.31	746 21.0
	Total	95,907	3,424,287	1,037	43,787	-	72,382.41	72,382.41	755 35.9
Mass.	Initial	53,164	1,227,355	2,886	20,573	-	31,459.13	31,459.13	629 33.1
	Re-Erad.	32,822	436,153	630	13,258	405.00	31,528.21	31,528.21	668 13.3
	Total	85,986	1,663,508	3,516	33,831	405.00	54,987.36	54,987.36	644 19.4
R. I.	Initial	40,510	47,054	617	8,911	-	14,275.10	14,275.10	353 1.2
	Re-Erad.	209,003	214,456	6,305	40,102	25.94	65,268.93	65,268.93	312 1.0
	Total	249,513	262,110	6,922	49,013	25.94	79,544.06	79,544.06	319 1.1
Conn.	Initial	100,737	448,068	4,830	13,007	-	22,369.50	22,369.50	222 4.1
	Re-Erad.	233,913	2,816,970	4,227	61,641	204.21	107,394.	107,394.62	460 14.0
	Total	334,650	3,265,038	9,057	74,648	204.21	129,763.51	129,763.51	582 9.3
N. Y.	Initial	560,690	17,466,195	30,196	255,153	22,382.99	417,655.68	440,048.67	735 31.2
	Re-Erad.	246,316	4,081,177	1,541	109,207	6,061.67	189,852.72	195,914.39	795 16.6
	Total	807,006	21,547,372	31,737	364,360	28,444.66	607,518.40	635,963.06	788 23.7
N. J.	All Init.	331	19,725	304	247	-	343.50	343.50	909 34.0
	Initial	256,533	12,879,975	26,589	213,253	-	359,432.76	359,432.76	1,40 49.0
	Re-Erad.	165,101	3,831,313	2,485	142,808	360.00	245,324.93	245,324.93	1,33 19.6
Penn.	Total	441,634	16,711,488	29,074	356,061	360.00	604,757.69	604,757.69	1,37 36.7
	Initial	1,379,780	49,784,592	75,026	683,906	22,464.79	1,130,480.74	1,152,945.53	836 33.1
	Re-Erad.	1,200,383	16,666,472	18,368	453,598	7,254.10	774,452.00	781,706.16	651 13.9
Totals	Total	2,580,163	66,451,064	93,394	1,137,504	29,718.89	1,904,932.80	1,934,651.69	750 25.8

Basis of costs: Includes wages of enlisted men figured at \$1.00 per eight hour day for period 1935-1938 and \$1.00 per six hour day during 1939-1941, plus arbitrary charge of 35 cents per man day for subsistence in 1935, 40 cents in 1936, and 50 cents from 1936-41, inclusive - cost of crew transportation figured at \$40. per month for each crew plus 3 cents per mile for operating, and at rate of 12 cents per mile for each mile travel was used on the project - and also telephone charges for each crew, plus 10 cents per month for each crew. Total cost of project, 1935-41, inclusive, was \$1,934,651.69, 1935-41, inclusive.



Table 27 - Ribes Eradication Work Performed Under C.C.C. Program  
in Northeastern States During Period 193-1941, Inclusive

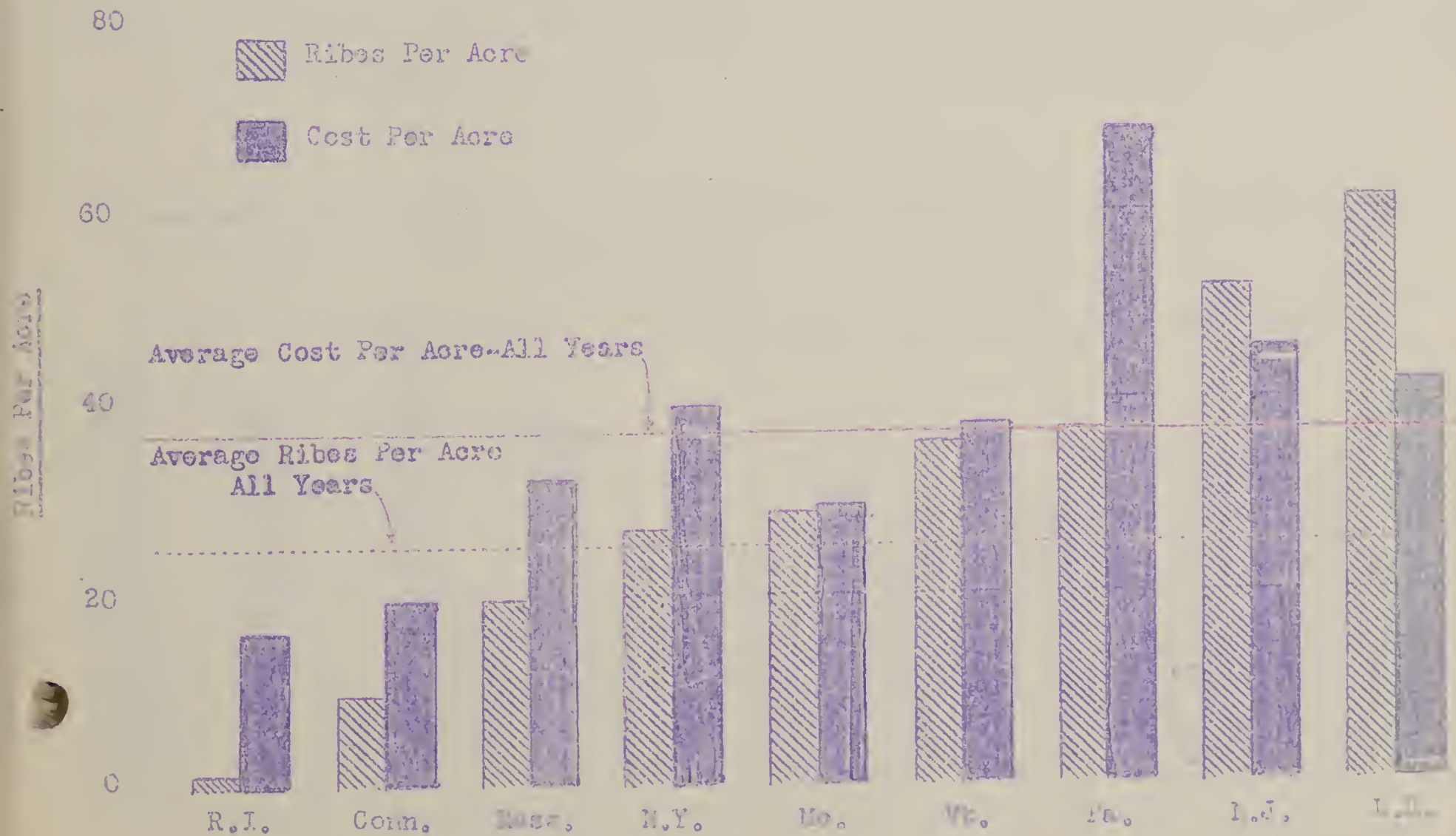
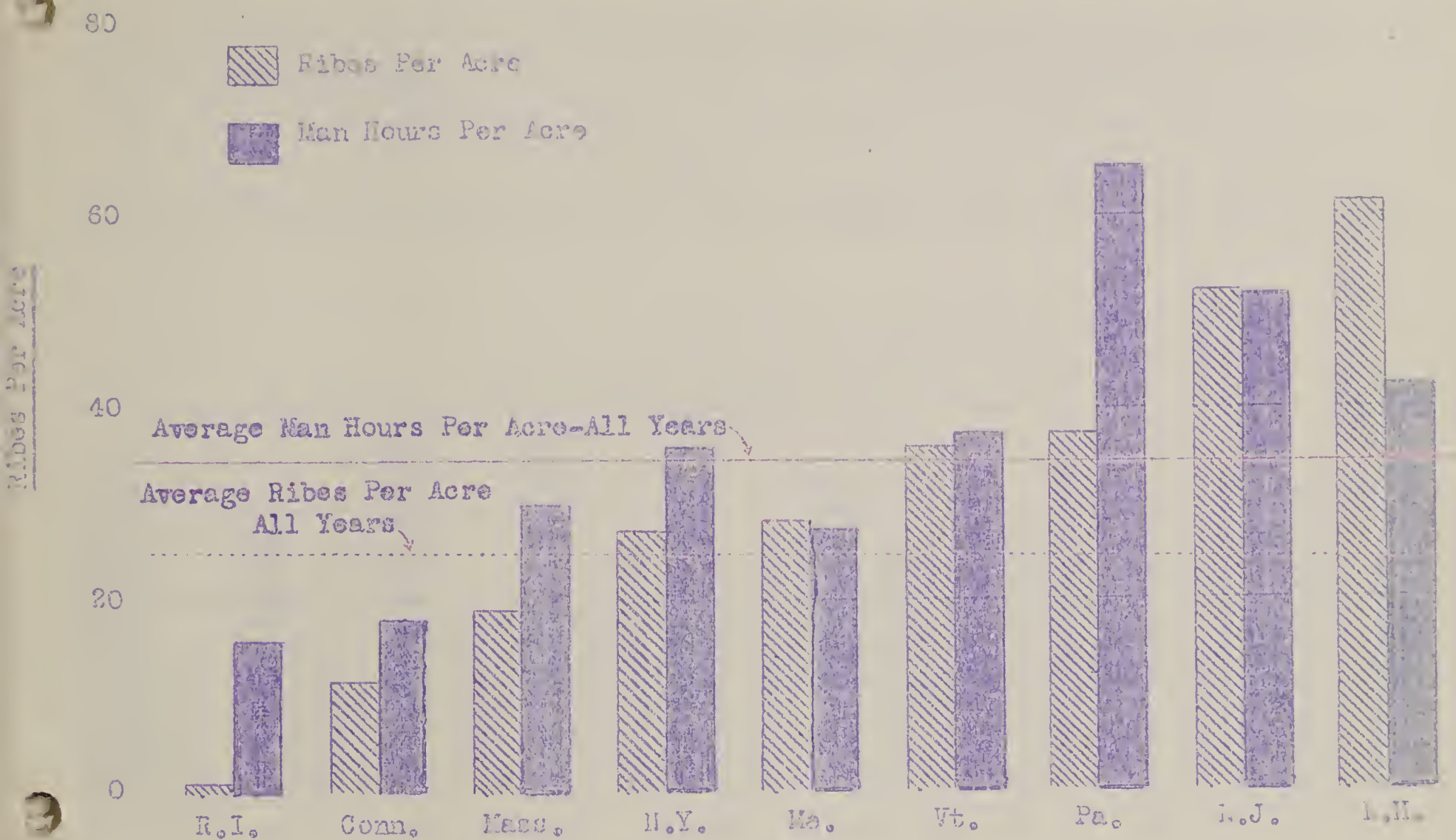
(Excludes nursery sanitation and cultivated black currant elimination)  
By Years

Year	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre	
			Wild	Cult.		State	C.C.C.	Total	Cost	Ribes Days
1933	Initial	125,328	5,584,682	4,674	65,658	-	98,309.68	98,309.68	.784	44.6
	Re-Erad.	119,990	2,626,452	455	56,962	-	83,832.68	83,832.68	.699	21.9
	Total	245,318	8,211,114	5,127	122,620	-	182,142.36	182,142.36	.742	33.5
1934	Initial	240,433	11,254,398	8,205	106,932	2,269,80	168,122.47	170,392.27	.709	46.8
	Re-Erad.	133,527	2,392,151	939	61,266	840.20	95,394.89	96,235.09	.721	17.9
	Total	373,960	13,646,549	9,144	168,198	3,110.00	263,517.36	266,627.36	.713	36.5
1935	Initial	333,431	11,418,110	22,185	154,909	11,709.21	234,977.46	246,686.67	.740	34.2
	Re-Erad.	175,898	2,528,305	5,663	65,752	2,330.62	101,515.03	103,845.65	.590	14.4
	Total	509,329	13,946,415	27,848	220,661	14,039.83	336,492.49	350,532.32	.668	27.4
1936	Initial	293,825	10,735,179	20,508	146,360	5,593.99	242,011.30	247,605.79	.643	35.5
	Re-Erad.	261,003	3,256,194	6,455	79,213	2,174.07	132,679.52	134,853.69	.517	12.5
	Total	554,828	13,991,373	26,963	225,573	7,768.06	374,691.32	382,459.38	.689	25.2
1937	Initial	152,782	4,876,083	10,037	88,692	392.85	151,107.47	151,500.32	.992	31.9
	Re-Erad.	131,959	1,633,149	1,117	47,661	92.15	79,433.72	79,525.87	.603	12.4
	Total	284,741	6,509,237	11,154	136,373	485.00	230,541.19	231,026.19	.811	22.9
1938	Initial	190,397	2,620,543	2,834	56,717	2,337.85	94,525.59	96,863.44	.965	26.1
	Re-Erad.	142,075	1,624,513	1,667	55,236	975.78	91,044.93	92,020.72	.648	11.4
	Total	332,472	4,245,056	4,501	111,953	3,313.64	185,570.52	188,884.16	.779	17.5
1939	Initial	60,192	1,617,664	1,993	30,024	-	65,213.07	65,213.07	1.03	26.9
	Re-Erad.	95,500	1,353,938	643	41,603	-	89,722.65	89,722.65	.939	14.2
	Total	155,692	2,971,602	2,636	71,627	-	154,935.72	154,935.72	.995	19.1
1940	Initial	55,486	1,214,839	4,179	20,004	-	57,446.51	57,446.51	1.04	21.9
	Re-Erad.	102,380	892,655	999	31,573	70.89	69,312.47	69,883.36	.683	8.7
	Total	157,876	2,107,494	5,169	57,577	70.89	127,258.98	127,329.87	.807	13.3
1941	Initial	17,903	463,039	411	8,580	161.09	18,766.69	18,927.78	1.08	25.9
	Re-Erad.	38,041	559,135	409	14,307	770.38	31,016.17	31,786.55	.856	9.4
	Total	55,947	1,022,174	820	22,887	931.47	49,782.86	50,714.33	.906	14.7
1942	Initial	1,379,780	49,764,392	75,023	683,906	22,464.79	1,130,480.74	1,152,945.53	.856	36.1
	Re-Erad.	1,200,383	16,666,472	18,333	453,593	7,254.10	774,452.06	761,706.16	.651	13.9
	Total	2,580,163	66,431,064	93,356	1,137,504	29,718.89	1,904,932.80	1,914,651.69	.750	25.3

Basis of Costs: Same as Table 25.

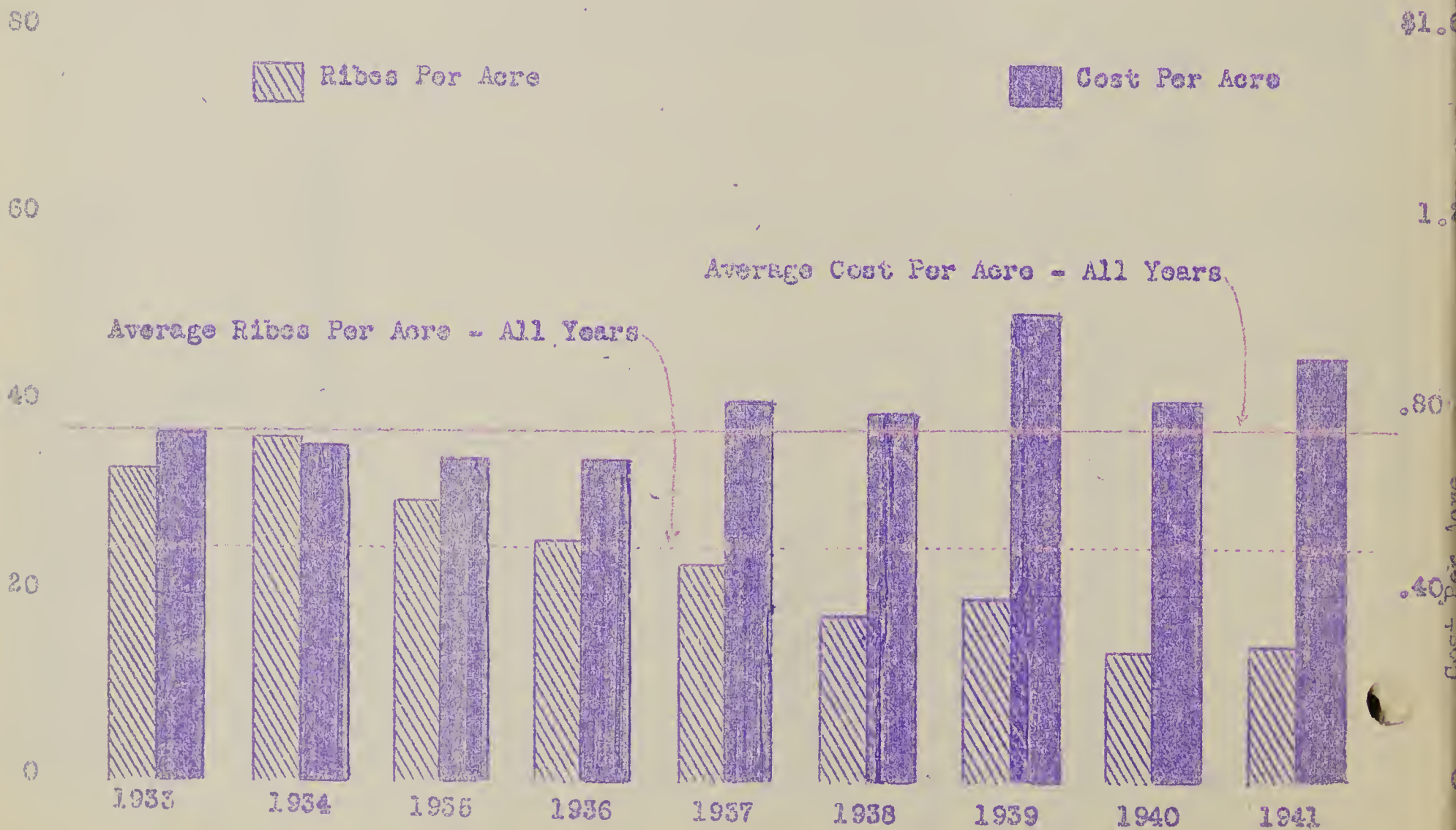
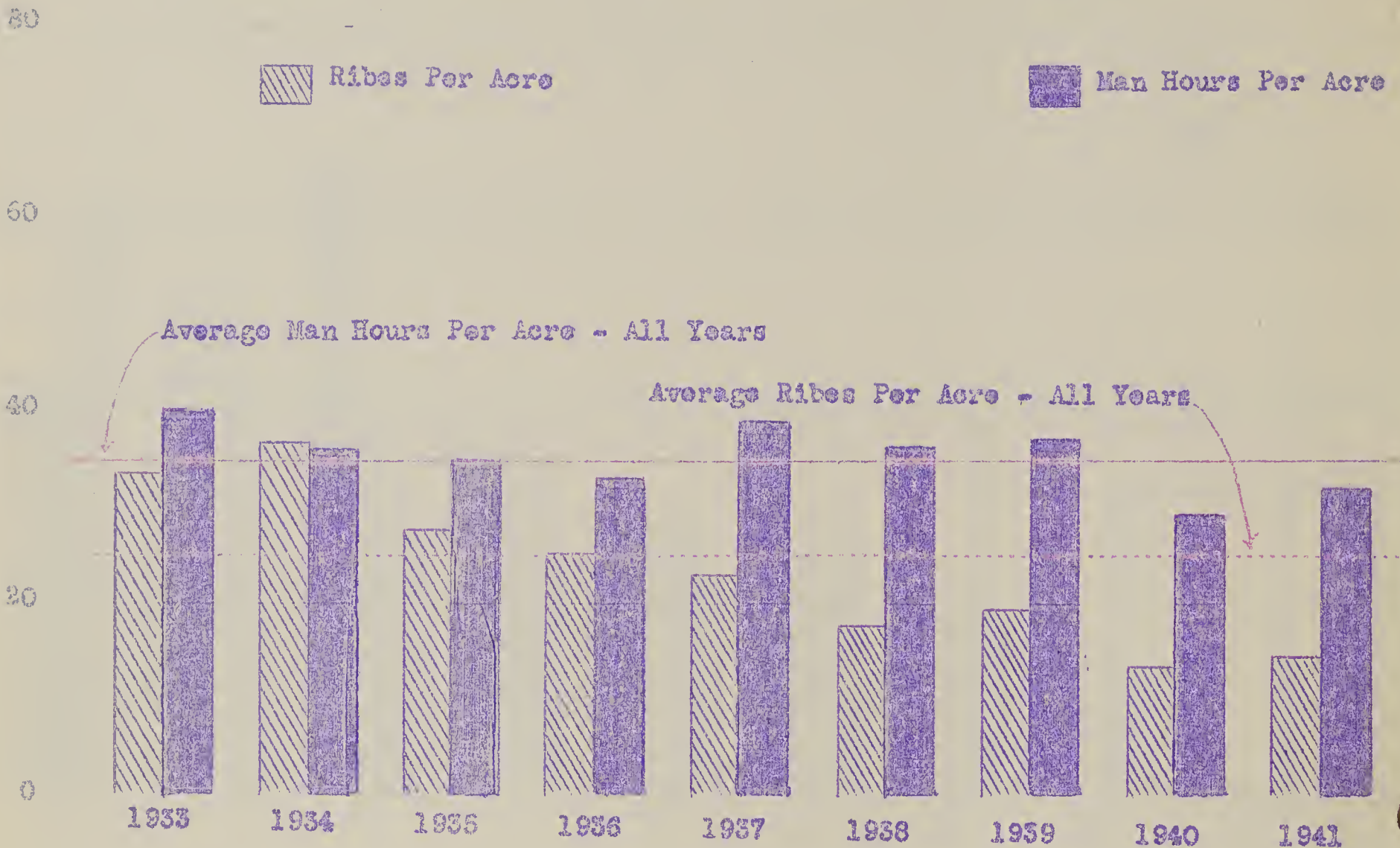


COMPARISON OF STATES OF NEW YORK AND OTHER STATES FOR 1941 PRODUCTION  
UNDER C.O.C. PROGRAM IN NORTHWESTERN STATES - 1941 to 1941, INCLUSIVE





COMPARISON, BY YEARS, OF PER ACRE VALUES FOR RIBES ERADICATION WORK  
 UNDER C.C.C. PROGRAM IN NORTHEASTERN STATES - 1933 to 1941, INCLUSIVE





Ribes Eradication Work on National Forests and Parks Under C.C.C. Program

No Ribes eradication work was performed on National Forests or Parks under the C.C.C. Program during 1941.

Table 28 summarizes the results of all Ribes eradication work performed by the C.C.C. personnel at Acadia National Park and on the two National Forests in this Region from 1933 to 1941, inclusive. C.C.C. crews were assigned to the control project at Acadia National Park each year except in 1938, 1940 and 1941. On the White Mountain National Forest, such work was performed by C.C.C. units in 1933, 1935, 1938 and 1939. Control activities under this program on the Allegheny National Forests were restricted to the period 1934 - 1936, inclusive.

Table 28 - Ribes Eradication Work Performed on National Forests and Parks Under C.C.C. Program in Northeastern States  
(Data included in Tables 26 and 27)

1933 - 1941

Project	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Total Cost (All C.C.C.)	Per Acre		
			Wild	Cult.			Cost	Ribes Days	
Acadia National Park, Maine	Initial	12,942	339,217	298	8,420	13,469.20	1.04	30.1	.26
	Re-Erad.	9,407	35,191	-	3,562	5,938.32	.637	3.7	.20
	Total	22,349	424,408	298	11,982	19,456.81	.871	19.0	.06
White Mt. National Forest, N.H.	Initial	1,950	633,781	85	3,325	3,423.71	1.76	325.0	1.13
	Re-Erad.	3,799	309,521	-	1,700	2,811.47	.740	3.5	.15
	Total	5,749	943,302	85	4,025	6,235.21	1.08	16.1	.70
Allegheny National Forest, Penna.	Initial	3,287	630,356	22	2,045	3,166.92	.969	132.2	.80
	Re-Erad.	525	41,068	-	435	646.41	1.23	76.2	.33
	Total	3,792	671,424	22	2,480	3,813.33	1.01	177.1	.86
Totals	Initial	18,159	1,653,354	400	12,790	20,058.86	1.10	91.0	.70
	Re-Erad.	13,731	386,780	-	5,697	9,446.59	.682	23.1	.41
	Total	31,890	2,039,134	400	18,487	29,505.45	.935	63.9	.56

Basis of costs: See Page 41

The initial control work has been completed on all Acadia National Park areas which contain sufficient white pine to justify the cost of Ribes eradication, except one small tract of approximately 48 acres which will be completed in 1942. About one third of the control area on this Park has also been reworked. Extensive post checks made in 1941 indicate that re-eradication work can be delayed for several years in many of the areas which were initially protected more than five years ago but have not been re-worked.

Initial control work has been completed on all white pine areas on the White Mountain National Forest, with the possible exception of recent acquisitions. Recommendations submitted for the fiscal year 1944 include the preparation of a map showing all control areas (white pine and protection zones) on the forest and a survey to determine if Ribes eradication is needed on any of the tracts. Several thousand acres, chiefly recent acquisitions, are still in need of initial control work on the Allegheny National Forest in Pennsylvania. Recommendations have been submitted for control activities on this forest during the fiscal year 1944, and the Forest Service also plans to conduct some Ribes eradication work during the fiscal year 1943.



Table 29 - Supervision of Ribes Eradication Work Under C.C.C.  
Program in Northeastern States During 1941

State	No. Technical Foremen and Checkers	Man Days Worked By Technical Foremen and Checkers	Total Cost (All Paid by C.C.C.)
Maine	1	22	\$122.21
Vt.	1	50	180.00
R. I.	2	71	347.74
N. Y.	35	800	4,442.07
Penna.	28	1,044	6,662.26
Totals	67	1,967	\$11,754.28

The cost of the technical foremen and checkers who supervise the C.C.C. activities is charged to the project "Eradication Assistants and Checkers". However, during 1941 the cost of four C.C.C. foremen in Connecticut and one state employee in Massachusetts was charged to "Ribes Eradication" as these men actually performed eradication work. In Massachusetts, the state employee who assisted on the C.C.C. project did scouting work on days when the C.C.C. personnel were not assigned to the project.

#### Nursery Sanitation - C.C.C. Program

Nursery sanitation work under the C.C.C. Program during 1941 was restricted to Pennsylvania where one foreman and 9 C.C.C. enlisted men spent 124 man days on re-eradication work in the environs of one state nursery. Only 215 wild Ribes were located and destroyed on the 370 acres examined at a total cost of \$260.52

Table 30 summarizes the results of all nursery sanitation work performed under the C.C.C. Program in the Northeastern States during the period 1933 to 1941, inclusive.



Table 30 - Summary of Ribes Pulling Work Under C.C.C. Program in Northeastern States, 1933-1941, Inclusive

State	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre		
			Wild	Cult.		State	C.C.C.	Total	Cost	Ribes	Man Days
Maine	Re-Erad.	691	8	-	81	-	129.82	129.82	.188	.01	.15
Vt.	Re-Erad.	700	1,500	-	174	417.90	108.00	525.90	.751	2.1	.26
R. I.	Re-Erad.	3,508	23	10	46	-	151.13	151.13	.043	.007	.01
Conn.	Initial	280	232	47	33	-	65.28	65.28	.233	0.8	.18
	Re-Erad.	2,135	4,030	4	659	-	1,185.68	1,185.68	.555	1.9	.31
	Total	2,415	4,262	51	692	-	1,250.96	1,250.96	.518	1.8	.28
N. Y.	Re-Erad.	630	17,750	-	183	318.40	255.50	573.90	.911	20.2	.45
Penna.	Re-Erad.	3,928	22,193	-	2,657	-	4,335.19	4,335.19	1.10	5.7	.80
Totals	Initial	280	232	47	33	-	65.28	65.28	.233	0.8	.18
	Re-Erad.	11,592	45,509	14	3,699	736.30	5,165.32	6,901.62	.595	5.9	.56
	Total	11,872	45,741	61	3,732	736.30	5,230.60	6,966.90	.587	5.9	.57

Basis of costs: See Page 41.

#### Blister Rust Canker Elimination Work - C.C.C. Program

No blister rust canker elimination work was conducted under the C.C.C. Program in the Northeastern States during 1941.

The results of the canker elimination work performed by C.C.C. personnel at Acadia National Park, Maine and on publicly-owned white pine plantations in Pennsylvania since 1933 are summarized in Table 31.

Table 31 - Blister Rust Canker Elimination Work Under C.C.C. Program in Northeastern States During Period 1933-1941, Inclusive

State	Year	Est. Number Pines Examined	No. Fatally Infected Pines Cut Down	No. Infected Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days	Total Cost (All C.C.C.)
					Branch	Stem		
Maine (Acadia National Park)	1933	10,000	849	1,951	6,045	280	409	\$920.45
	1934	23,625	145	581	1,675	66	159	318.66
	1935	3,000	525	1,737	7,802	671	552	558.50
	1936	16,100	1,341	3,192	8,983	1,436	1,000	1,500.00
	1938	5,136	236	1,129	1,927	176	155	354.36
	1939	400	61	289	622	56	102	276.37
	Totals	58,261	2,957	8,879	27,054	2,691	2,177	3,932.34
Penna.	1934	42,566	3,012	9,637	176,874	-	807	1,585.32
	1935	207,848	15,435	40,731	180,788	-	1,892	3,307.02
	1936	210,102	9,141	24,374	94,774	-	1,529	2,887.51
	1937	106,502	720	1,406	6,019	67	536	623.75
	Totals	567,018	28,308	76,048	458,455	67	4,764	8,303.60
Totals	1933	10,000	849	1,951	6,045	280	409	\$920.45
	1934	66,191	3,157	10,113	178,549	66	966	1,703.98
	1935	210,848	15,760	42,438	188,590	671	2,944	5,385.27
	1936	226,202	10,482	27,566	103,757	1,436	2,529	4,387.61
	1937	106,502	720	1,406	6,019	67	536	623.75
	1938	5,136	236	1,129	1,927	176	155	354.36
	1939	400	61	289	622	56	102	276.37
	Totals	625,279	31,265	84,827	455,607	873	6,741	12,125.31

Basis of costs: Includes wages of C.C.C. personnel assigned to canker elimination work figured at \$1.00 per eight hour man day plus 36¢ per man day for subsistence in 1933; 40¢ in 1934; and 50¢ during the period 1935-1939, inclusive - cost of crew transportation and miscellaneous expenses for supplies and equipment.



Pine and Control Area Mapping - C.C.C. Program

Pre-eradication survey work under the C.C.C. Program during 1941 was limited to Pennsylvania where two C.C.C. checkers and 12 enlisted men were assigned to such activities for varying periods up to August 31, 1941. The results of this mapping work in Pennsylvania were as follows:

Number towns where work performed..... 20  
 Acreage mapped.....7,284  
 Miles control area boundary lines painted in field..... 127  
 Total man days..... 427  
 Total cost (all C.C.C.).....\$1,101.52

Table 32 - Pine and Control Area Mapping Under C.C.C. Program  
 in Northeastern States During Period 1933-1941, Inclusive

State	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost		
					State	C.C.C.	Total
Maine	296,670	169,667	-	2,446	-	16,956.86	16,956.86
N. H.	81,096	2,740	-	3,963	-	11,168.98	11,168.98
Vt.	87,619	62,593	-	932	189.59	4,800.57	4,990.16
R. I.	106,224	-	-	835	-	7,675.26	7,675.26
Conn.	47,512	93,507	-	339	-	827.60	827.60
N. Y.	73,704	35,495	-	1,221	-	2,388.49	2,388.49
Penna.	307,013	-	2,630	28,379	-	101,655.59	101,655.59
Totals	999,838	364,002	2,630	38,265	189.59	145,473.35	145,662.94

Basis of costs: Includes actual salaries and transportation expenses of C.C.C. technical foremen and checkers assigned to mapping project - cost of enlisted men's time figured on same basis as listed for Table 26 - cost of mapping supplies.



Table 33 - Total Expenditures, By Cooperating Agencies, Under C.C.C.  
Program in Northeastern States

1941

State	State Funds	C.C.C.	Total
Maine	-	\$738.40	\$738.40
Vt.	-	1,016.29	1,016.29
Mass.	\$405.08	227.39	632.47
R. I.	-	2,162.69	2,162.69
Conn.	204.21	1,801.05	2,005.26
N. Y.	322.18	18,104.85	18,427.03
Penna.	-	40,980.04	40,980.04
Totals	931.47	65,030.71	65,962.18

1933-1941, Inclusive

State	State Funds	P.W.A.	B.P.I.	W.P.A.	C.C.C.	Totals
Maine	\$135.00	-	-	-	\$355,593.93	\$355,728.93
N. H.	1,241.28	-	-	-	149,340.77	150,582.05
Vt.	1,548.49	-	85.50	-	95,702.14	97,336.13
Mass.	2,365.21	-	-	948.45	64,503.64	67,817.30
R. I.	25.94	-	-	-	111,809.98	111,835.92
Conn.	4,975.26	244.36	1,339.60	-	176,835.53	183,394.75
N. Y.	64,123.85	-	-	300.80	774,782.96	839,207.61
N. J.	-	-	-	-	346.50	346.50
Penna.	2,056.24	-	-	-	894,485.67	896,541.91
Totals	76,971.27	244.36	1,425.10	1,249.25	2,625,401.14	2,703,291.12

\* In addition, \$203.33 C.C.C. funds were expended under the P.W.A. Program.

\*\* An additional \$216.40 C.C.C. funds were expended under the E.R.A. Program.



Table 34 - Total Cooperative Expenditures, By Projects, Under C.C.C. Program  
in Northeastern States During Period 1933-1941, Inclusive

State	Period	Ribes Eradication	Eradication Assistants and Checkers	Nursery Sanitation	Treatment Diseased Pines	Field Data		Total
						Mapping	General	
Maine	1941	616.19	122.21	-	-	-	-	738.40
	1933-41	254,518.45	79,814.00	129.62	5,022.90	16,956.86	386.90	355,728.93
N. H.	1941	-	-	-	-	-	-	-
	1933-41	101,393.02	38,020.05	-	-	11,168.93	-	150,582.05
Vt.	1941	836.29	180.00	-	-	-	-	1,016.29
	1933-41	72,382.41	19,437.66	525.90	-	4,990.16	-	97,336.13
Mass.	1941	632.47	-	-	-	-	-	632.47
	1933-41	55,392.44	12,864.86	-	-	-	60.00	68,317.50
N. J.	1941	1,814.95	347.74	-	-	-	-	2,162.69
	1933-41	79,570.00	24,374.22	151.13	-	7,675.26	65.31	111,835.92
Conn.	1941	2,005.26	-	-	-	-	-	2,005.26
	1933-41	129,968.12	49,489.41	1,250.96	-	827.60	1,853.69	183,394.78
N. Y.	1941	13,984.96	4,442.07	-	-	-	-	18,427.03
	1933-41	635,963.06	200,131.30	573.90	-	2,388.49	150.85	839,207.60
Pa.	1941	-	-	-	-	-	-	-
	1933-41	346.50	-	-	-	-	-	346.50
Del.	1941	30,824.21	6,662.26	260.52	-	1,101.52	2,131.53	40,980.04
	1933-41	605,117.69	156,890.22	4,335.19	8,203.09	101,655.59	20,340.13	886,541.91
Totals	1941	50,714.33	11,754.26	260.52	-	1,101.52	2,131.53	65,962.18
	1933-41	1,934,651.69	581,021.72	6,966.90	12,125.99	145,662.94	22,861.68	2,703,291.12



BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS UNDER THE WPA PROGRAM  
IN THE NORTHEASTERN STATES - FEDERAL AGENCY PROJECTS

Allotments

W.P.A. project funds totalling \$4,019,187.82 have been allocated to the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture for blister rust control activities in the nine Northeastern States during the period July 25, 1935 to December 31, 1941. Detailed information concerning the various allotments, by states, is given on Pages 80 to 83. W.P.A. allotments to New Jersey were restricted to the fiscal years 1935 to 1937, inclusive, while no Federal Agency allotments were made to Connecticut after the fiscal year 1939. Projects were operated continuously in the other seven Northeastern States, except Rhode Island where the work was restricted to Ribes eradication during the summer months since 1937.

Purpose of Allotments

The specific objectives have been outlined as follows:

1. To protect our national resources of white pine from the blister rust by the systematic, thorough, and efficient elimination of Ribes from definite areas.
2. To employ in the locality of the work as many of the persons on public relief as may effectively be used.
3. To distribute opportunities for work as widely, geographically, and as equitably as may be practicable.
4. To aid in all possible ways the accomplishment of the other purposes of the Emergency Relief Appropriation Acts of 1935-1941, inclusive.

Economic and Social Value of Project

The white pine crop in the Northeastern States comprises about 6 $\frac{1}{2}$  million acres of which 98 percent is in state or private ownership, mostly in farm woodlots. Millions of white pines are also being planted each year in connection with re-forestation activities. The scenic, recreational, and water-shed protection value of this crop is likewise of tremendous importance.

Control activities under the W.P.A. Program during the period 1935-1941, inclusive, have played an important part in the protection of this valuable white pine crop from blister rust, since 3,406,457 acres (containing 1,443,547 acres of white pine) have been cleared of Ribes, the alternate host of the disease. This W.P.A. work resulted in the establishment of initial control on hundreds of thousands of acres where such work was urgent, but not previously possible due to lack of funds. The maintenance of protection on areas initially worked several years ago has also been materially advanced by the W.P.A. Program.



The expenditure to December 31, 1941 of \$3,893,868.56 W.P.A. money (exclusive of administrative funds) on blister rust control in the rural portions of the Northeastern States has given 12,510 security-wage workers 7,264,943 man hours of useful, self-respecting employment, directly benefitting persons who would otherwise have been on town relief, especially in communities where there was a lack of other projects of a permanent public benefit. Estimating that each of these 12,510 W.P.A. employees had three dependents, a total of 50,040 individuals were at some time during the program being fed, sheltered and clothed from wages earned in connection with this work.

The blister rust control project has been especially well adapted to the W.P.A. Program, since the Ribes eradication work requires chiefly manual labor and only a relatively small expenditure for equipment. Expenditures for wages and salaries have constituted 94.1 percent of the entire cost of the program.

Over twelve thousand men have received training in Ribes eradication work, and many of them will be available for similar work in the future. The training should also enable many of these men to maintain control of blister rust on their own properties. Most important of all, this work has demonstrated that the Bureau requires of its personnel full attention to the duties at hand. The experience these employees gained on the blister rust control project has given them a better conception of public work in general, and the importance of conservation of natural resources.

#### Responsibilities and Direction of Work

W.P.A. funds for blister rust control have been specifically allocated to the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture for expenditure by the Division of Plant Disease Control in accordance with W.P.A. regulations.

The Senior Pathologist of the Cambridge, Mass. Regional Office of the Bureau was made "Project Manager" for the W.P.A. blister rust control program in the Northeastern States, and was delegated the funds allotted to the respective nine states in the Region. He was also given authority to obtain services and supplies and to incur expenditures under each state allotment. Letters of authorization have been issued by the Bureau to the project manager and each state leader, who in turn have issued monthly sub-letters of authority, where necessary, to employees working under their direction. Labor requisitions have been submitted to the respective State W. P. A. offices which make all assignments. Practically all administrative office work has been handled by the Regional Office including purchases, the preparation of all payrolls, and the auditing of all other vouchers and invoices which are transmitted to the Treasury Accounts Office at Boston, Mass. for payment.

The W.P.A. blister rust control work in each state was performed under the general plan embodied in the Memorandum of Understanding existing between the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture and cooperating States, and was fitted in with other control activities in the states so as to make a unified, coordinated work program. The Bureau, however, carried direct responsibility for both the fiscal and technical phases of the work. The state forester or other collaborator in the state was consulted as to policies and was kept fully advised at all times. The state official administering the state plant pest laws enforced such state regulations as were available



for the effective prosecution of blister rust control work, and deputized the cooperative employees to permit the destruction of such pine and Ribes as was necessary and as provided by state laws. Federal money cannot be used to pay compensation for plants destroyed.

Representatives of the respective State W.P.A. Administrators made regular quarterly inspections of our blister rust control projects during the past few years. These contacts were mutually beneficial and gave all concerned a better understanding of the problems involved in the prosecution of the project.

#### Field Supervision

The successful results accomplished under the W.P.A. Program was primarily due to the availability of a trained force of state and federally appointed district leaders and supervisors to direct the project. These leaders were accustomed to supervising large groups of men and had little difficulty in adapting themselves to the W.P.A. Program. Most of the present supervisory force of 8 state leaders and 27 district leaders are under Civil Service and have had from 11-24 years experience in blister rust control work. W.P.A. funds were used to hire supervisors only during 1935 and 1936 when the employment of several thousand laborers made it necessary to provide our regular district leaders with assistants. However, several of the states have furnished experienced supervisors to assist in the supervision of the W.P.A. personnel each year since 1936.

#### GENERAL STATEMENT REGARDING BLISTER RUST CONTROL ACTIVITIES UNDER W.P.A. PROGRAM IN NORTHEASTERN STATES DURING CALENDAR YEAR 1941

Federal Agency W.P.A. projects were conducted in all states in the Northeastern Region during 1941 except Connecticut and New Jersey. The project in Rhode Island operated only during the Ribes eradication season from May 8 to October 27, 1941.

Control activities consisted of Ribes eradication, nursery sanitation, pre-eradication surveys, blister rust canker elimination, and special pine infection studies. In addition, W.P.A. clerks assisted at the Cambridge Regional Office, at four of the state leaders' offices and in most of the district offices. Field work from May to October, inclusive, was restricted to Ribes eradication in all states except New Hampshire where such activities were terminated on October 15th. During the remainder of the year, the major field project in all states was pine and control area mapping. W.P.A. employees were also assigned to blister rust canker elimination work on publicly-owned lands in Vermont, Massachusetts, and New York, while a few W.P.A. laborers assisted on special pine infection studies in Vermont and New York.

Due to the delay in passage of the 1941 Emergency Relief Act and the uncertainty of funds being available for Federal Agency W.P.A. projects after June 30, 1941, applications for our blister rust control projects were not prepared and submitted to the respective State W.P.A. Administrators until June 23, 1941. As a result, the W.P.A. control work was suspended for approximately three weeks in July pending final approval of the New Hampshire, Vermont, New York, and Pennsylvania project applications at Washington. In Massachusetts, the W.P.A. personnel were temporarily transferred to an approved Bureau-sponsored project under the State Program which



resulted in only a few days break in employment. Work was resumed in Maine and Rhode Island on July 3rd upon receipt of instructions from Washington that such action was permissible as soon as the respective State W.P.A. Administrators approved our project applications for work after July 1, 1941. Later, there was some doubt as to the legality of this procedure, but the local Treasury Accounts Office at Boston, Mass. approved the vouchers involved for such services, prior to final approval of the project applications in these two states, on a "pending payroll" basis.

The required 95-5 ratio as regards W.P.A. relief and non-relief employment was maintained at all times. The salaries of four district leaders (one in Vermont, two in New York, and one in Pennsylvania) were paid from W.P.A. funds during the entire year, and a few non-relief workers were also employed for varying periods in Maine, New York and Pennsylvania.

Great difficulty was experienced in obtaining W.P.A. labor for our projects in most of the states during 1941, especially in sections where defence industries were located. In one New Hampshire district, no W.P.A. employees were available for Ribes eradication work, while in New York only a few laborers were obtained in several of the districts in spite of strenuous efforts on the part of our leaders. The average age of the W.P.A. workers was considerably higher than in previous years, and many of the men assigned had physical disabilities which made it difficult for them to perform the required work.

The 1941 Emergency Relief Act included a provision whereby non-veterans who had been continuously employed on projects for 18 months were subject to removal from employment when there were available for assignment, to the jobs held by them, other certified persons, with the required job qualifications, who had been certified and available for assignment for a period of three months or more and who, during that period, had no employment on work projects. Due to the acute shortage of W.P.A. labor in many sections, we were able to retain many workers after they had 18 months continuous employment as there were no qualified replacements available. On the other hand, many of the best qualified workers assigned to our projects were transferred to W.P.A. national defense training schools during 1941 to prepare them for jobs in private industry.

During the period January 1 to May 2, 1941, inclusive, an average of 150 certified W.P.A. workers, including 8 clerks at the regional office, were assigned to our Federal agency projects. From May 3 to October 31, an average of 464 security-wage workers were employed, including from one to five non-relief laborers and eight clerks at the Cambridge Office. The force was reduced to an average of 190 persons during the last two months of the year. This number included a few non-relief laborers and nine clerks at the regional office. Four of the district blister rust control leaders were employed continuously on W.P.A. funds during 1941.

The following graph indicates the W.P.A. personnel assigned to control work under the Federal agency projects in the Northeastern States, by fiscal months, during the calendar year 1941, and the maximum and minimum number employed each year during the period 1935-1941, inclusive.

Tables 35 to 37, inclusive, and the chart on Page 58 give detailed information on W.P.A. employment, man month and man year costs, and the ratio between relief and non-relief employment during the calendar year 1941, and the period 1935-1941, inclusive.



September Year 1941



0  
 Jan. 10 Feb. 7 Mar. 7 Apr. 4 May 2 May 30 June 27 July 25 Aug. 23 Sept. 19 Oct. 17 Nov. 14 Dec. 12 Jan. 9

Calendar Years 1935 to 1941, Inclusive

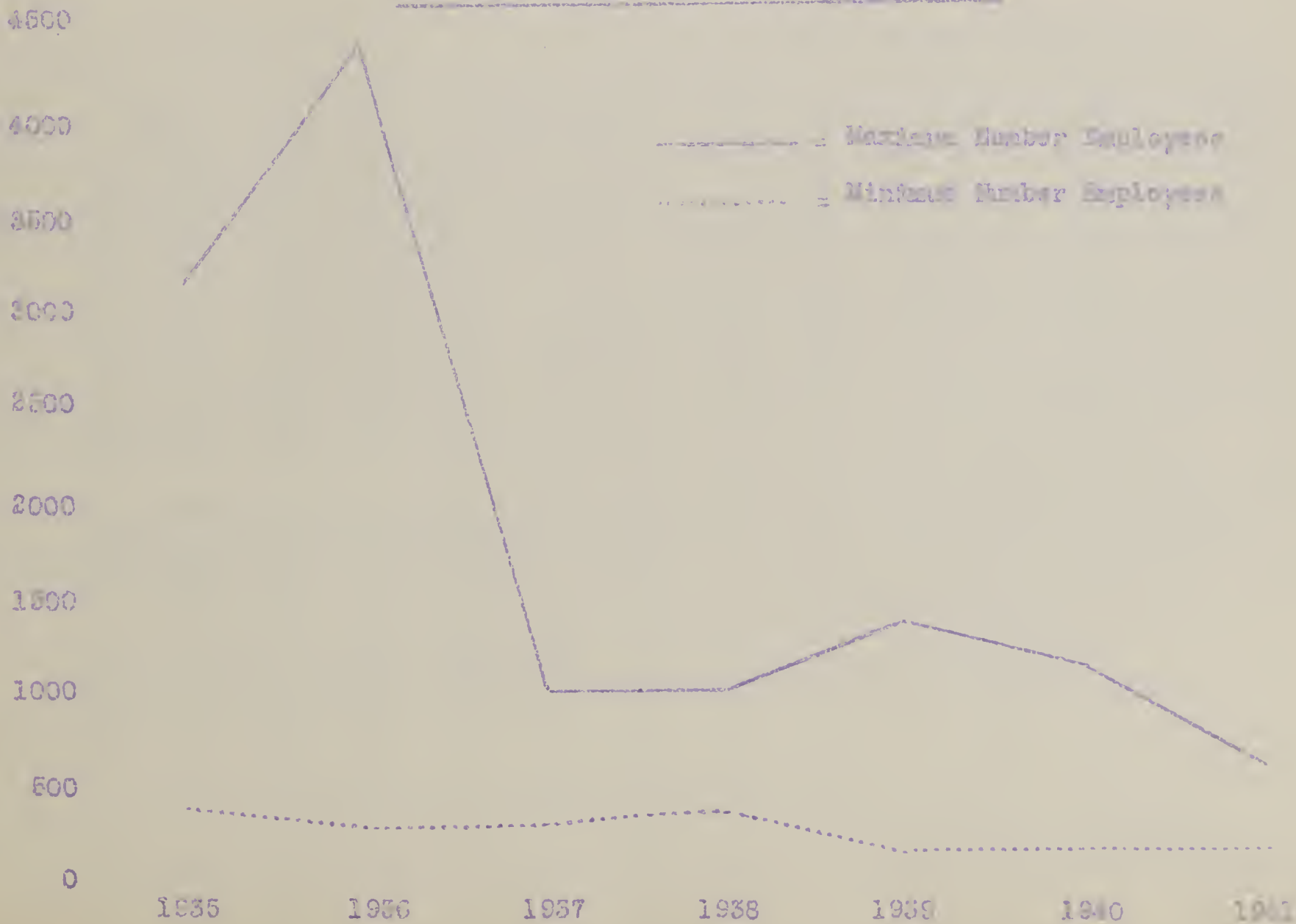




Table 35 - Employment on Blister Rust Control Under W.P.A. Program  
Calendar Year 1941

State	Security Wage Workers						Appointees			All		
	Relief			Non-Relief						Employees		
	Man Hours	Man Mos.	Man Yrs.	Man Hours	Man Mos.	Man Yrs.	Man Hours	Man Mos.	Man Yrs.	Man Hours	Man Mos.	Man Yrs.
Ala.	91,872	703.7	58.9	1,008	7.8	0.7	-	-	-	92,880	714.5	59.6
A. H.	75,339	579.5	48.3	-	-	-	-	-	-	75,339	579.5	48.3
Cal.	62,632	481.4	40.1	-	-	-	1,573	12.1	1.0	64,155	493.5	41.1
Conn.	66,732	513.3	42.8	-	-	-	-	-	-	66,732	513.3	42.8
D. C.	8,736	67.2	5.6	-	-	-	-	-	-	8,736	67.2	5.6
Fla.	93,961	761.2	63.4	863	6.6	0.5	3,133	24.1	2.0	102,957	791.9	65.9
Ill.	59,276	456.0	38.0	247	1.9	0.2	1,703	13.1	1.1	61,226	471.0	39.3
Sub- Totals	463,493	3,565.3	297.1	2,118	16.3	1.4	6,409	49.3	4.1	472,025	3,630.9	302.6
Admin.	-	-	-	-	-	-	5,376	28.0	2.3	5,376	28.0	2.3
Totals	463,493	3,565.3	297.1	2,118	16.3	1.4	11,785	77.3	6.4	477,401	3,658.9	304.9

July 29, 1935 to December 31, 1941

	Security Wage Workers						Appointees			All		
	Relief			Non-Relief						Employees		
	Man Hours	Man Mos.	Man Yrs.	Man Hours	Man Mos.	Man Yrs.	Man Hours	Man Mos.	Man Yrs.	Man Hours	Man Mos.	Man Yrs.
1.	212,906	9,402.6	783.6	56,099	443.3	36.9	51,321	269.9	22.5	1,321,626	10,115.8	843.
2.	110,942	8,859.9	736.3	116,540	915.6	76.3	60,960	317.5	26.5	1,288,442	10,093.0	841.
3.	854,523	6,295.7	524.6	41,113	319.3	26.6	40,165	215.1	17.7	915,801	6,828.1	568.
4.	793,559	6,162.6	513.6	9,077	70.7	5.9	44,218	230.3	19.2	846,854	6,463.6	538.
5.	90,924	715.2	59.6	3,339	28.4	2.4	2,976	15.5	1.2	97,539	759.1	65.
6.	145,253	1,147.4	95.6	1,330	14.2	1.2	3,487	44.2	3.7	155,570	1,205.8	100.
7.	962,905	15,243.7	1270.7	39,463	307.1	25.6	109,329	577.2	48.1	2,111,697	16,133.0	1344.
8.	10,870	86.7	7.2	-	-	-	2,285	11.9	1.0	13,155	98.6	8.
9.	311,099	6,925.9	577.2	23,076	192.1	16.0	49,511	262.1	21.9	333,636	7,381.1	615.
10.	272,931	54,845.7	4570.4	291,637	2290.7	190.9	369,752	1941.7	161.8	7,634,370	59,078.1	4923.
11.	-	-	-	325	2.5	0.2	23,645	149.2	12.4	23,970	151.7	12.
12.	572,331	54,845.7	4570.4	291,962	2293.2	191.1	398,397	2090.9	174.2	7,663,340	59,229.8	4935.

\* Includes time paid supervisors during 1935 and 1936 for all accumulated leave taken after completion of their field services.



Table 36 - WPA Employment, Man Year, and Man Month Cost in Military Post Control Work Under W.P.A. Program in Northeastern States

Calendar Year 1941

State	Peak Employment		Man Year Cost		Man Month Cost		
	No. Men	Period	Over-All (1)	Net (2)	Over-All	Net	Operating Cost (3)
Maine	115	7/28-8/8/41	769.15	739.15	64.13	62.16	5.96
N. H.	99	9/6-9/19/41	819.88	819.88	68.33	67.38	7.95
Vt.	85	5/31-6/13/41	761.23	739.83	62.56	62.13	6.43
Mass.	77	10/4-10/17/41	832.23	832.23	69.32	69.32	7.77
R. I.	16	5/3-5/16/41	752.32	752.14	61.02	60.85	2.17
N. Y.	100	8/23-9/5/41	892.46	920.39	74.27	73.60	6.67
Penn.	107	6/31-6/13/41	773.82	756.80	64.55	63.40	6.15
Totals	-	-	811.06	822.83	57.66	69.09	7.00

\* On a fiscal year basis, the man month operating cost did not exceed the limitation in the project applications. The man month operating cost in excess of \$6.00 for the calendar year 1941 are due to the fact that all 1940 obligations, which were not paid by January 15, 1941 when the Regional Office books were closed, were included as 1941 expenditures. All 1941 obligations, regardless of payment date, were included as 1941 obligations because all Federal Agency W.P.A. projects terminated on December 31, 1941.

July 29, 1935 to December 31, 1941

State	Peak Employment		Man Year Cost		Man Month Cost		
	No. Men	Period	Over-All (1)	Net (2)	Over-All	Net	Operating Cost
Maine	741	8/18-8/31/36	769.82	731.03	64.18	60.92	6.26
N. H.	806	6/1-6/15/36	761.74	773.12	63.65	64.02	6.37
Vt.	632	8/18-8/31/36	708.54	723.30	59.76	60.38	6.62
Mass.	327	2/1-6/15/36	800.04	935.21	75.00	77.29	7.29
R. I.	64	6/1-6/15/36	700.91	775.83	63.16	64.65	1.49
Conn.	115	9/1-9/15/35	827.40	849.02	68.95	71.52	6.57
N. Y.	1,184	6/1-6/15/36	842.13	873.57	70.12	72.79	2.67
N. J.	14	8/16-8/31/36	830.65	1,014.36	74.07	84.53	2.47
Penn.	603	7/16-7/31/36	740.70	766.05	61.75	64.00	2.25
Totals	-	-	790.94	817.62	66.91	68.15	5.90

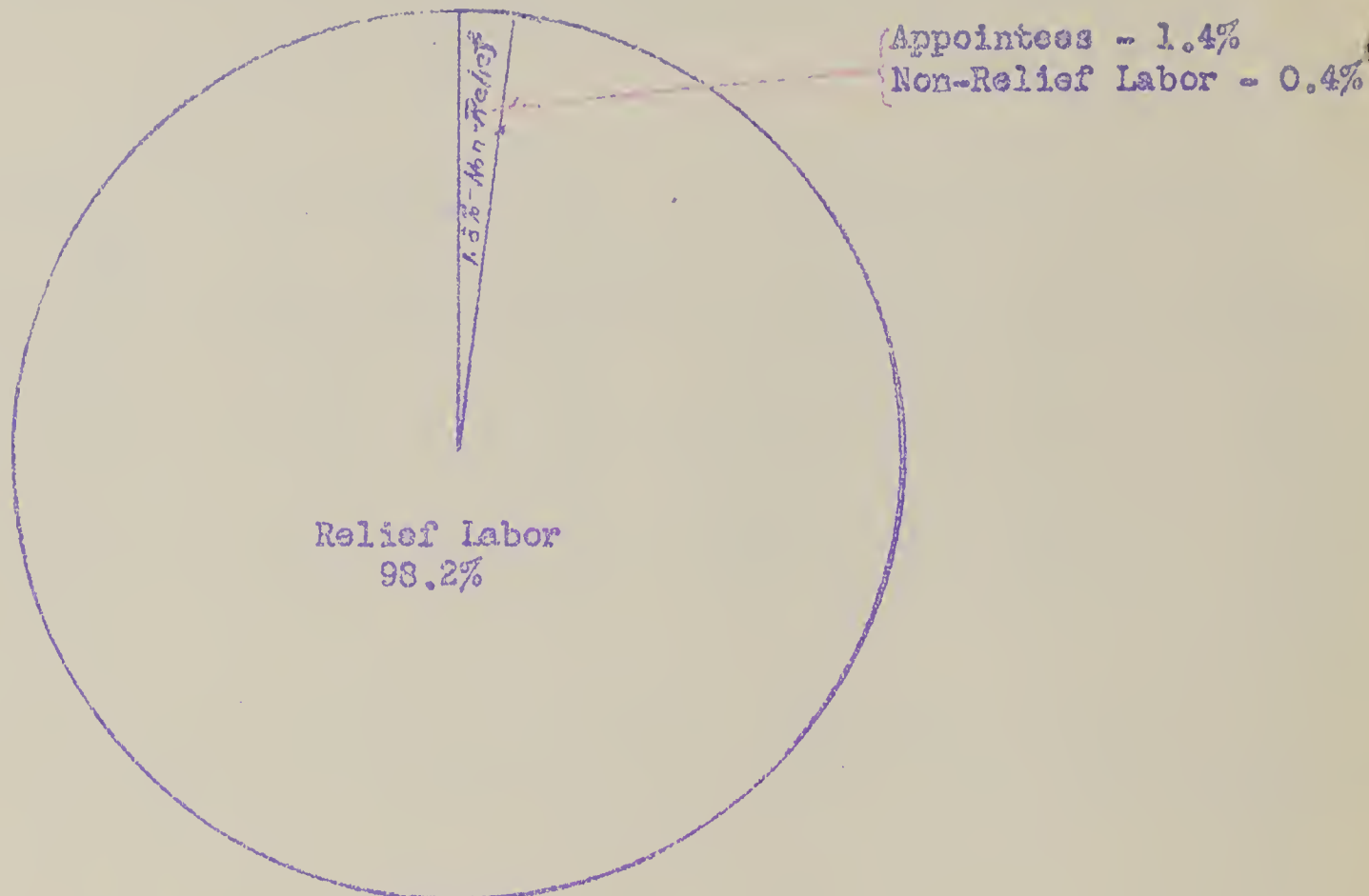
(1) Based on total expenditures divided by number of security-range and appointee man years.

(2) Based on total expenditures divided by number of security-range man years.

Data for Massachusetts include Cambridge, Massachusetts regional office employment and expenditures.



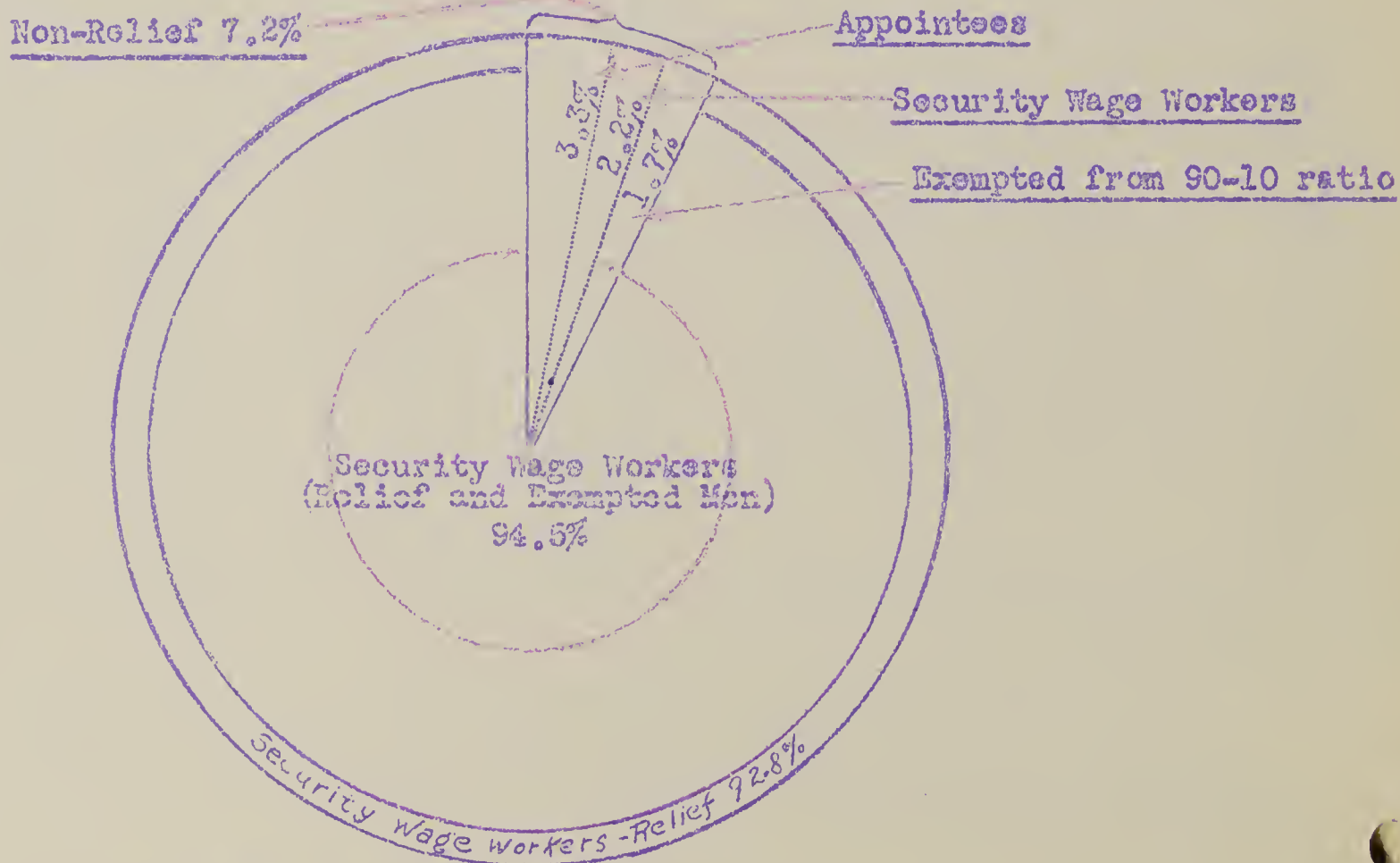
Personnel by Employment Classes on Blister Rust Control  
WPA Program in Northeastern States - Calendar Year 1941



Total Man Months of Employment - 3,630.9

Personnel by Employment Classes on Blister Rust Control

WPA Program in Northeastern States July 29, 1935 - December 31, 1941, Inclusive



Total Man Months of Employment - 59,078.1

(Includes 406 men exempted from 90-10 ratio for 1020.9 man months in three states during 1936)



Table 37 - Man Months of Employment by Relief and Non-Relief Employees and the Status in Maintaining Required Ratio

Calendar Year 1941

State	Total Man Months Employment		Man Months Surplus Over Required Ratio
	Relief	Non-Relief	
Maine	706.7	7.8	29.4
N. H.	579.5	-	30.5
Vt.	431.4	12.1	13.2
Mass.	513.3	-	27.0
R. I.	67.2	-	3.5
N. Y.	761.2	30.7	9.4
Penna.	456.0	15.0	9.0
Totals	3,565.3	65.6	122.0

July 29, 1935 to December 31, 1941

State	Total Man Months Employment		Man Months Surplus or Deficit Over Required Ratio
	Relief	Non-Relief	
Maine	9,402.6	713.2	+ 60.7
N. H.	8,869.9	1,235.1	- 518.4
Vt.	6,295.7	532.4	- 21.7
Mass.	6,162.6	301.0	+ 166.5
R. I.	715.2	43.9	+ 17.2
Conn.	1,147.4	58.4	+ 48.7
N. Y.	15,248.7	384.3	+ 386.2
N. J.	86.7	11.9	- 3.3
Penna.	6,926.5	454.2	+ 68.7
Totals	54,845.7	4,232.4	+ 204.1

Excluding the 1,020.9 man months worked by 406 non-relief laborers exempted from the 90-10 ratio during the period June 1 to August 28, 1936, there actually has been a surplus of 1225 man months of relief employment over the required ratio for the entire program.



# Hours of Work and Wage Scales

All of our Federal Agency W.P.A. projects in the Northeastern States were operated on a 120 hour fiscal-month basis during 1941.

County wage rates applied in all states except New York, where the State administrator approved state-wide rates for the projects operated by the Bureau of Entomology and Plant Quarantine. There were no changes in the wage rates up to July 1, 1941 when the 1940 census (rather than 1930) became the basis for county wage rates. Effective November 1, 1941 all W.P.A. project wage employees were granted pay increases except those assigned to certified national defense projects authorized to work in excess of 120 hours per fiscal month and persons assigned as W.P.A. in-plant trainees.

Table 38 - Approved W.P.A. Wage Scales For Federal Blister Rust Control Work in Northeastern States During Calendar Year 1941

(Fiscal Month Basis)

Period - January 1 to June 30, 1941

Counties in Which 1930 Population of Largest Municipality Was	Maximum Hours Per Month	Monthly Wage Rates		
		Unskilled A	Inter-mediate	Skilled
Over 100,000	120	\$62.80	\$65.60	\$68.40
25,000 to 100,000	120	48.00	57.60	75.60
5,000 to 25,000	120	44.40	52.80	68.40
Under 5,000	120	39.60	48.00	62.40

Period - July 1 to October 31, 1941

The wage schedule for this period was the same as shown above except the county rates were based on the 1940 population of the largest municipality.

Period - November 1 to December 31, 1941

Counties in Which 1940 Population of Largest Municipality Was	Maximum Hours Per Month	Monthly Wage Rates		
		Unskilled A	Inter-mediate	Skilled
Over 100,000	120	\$57.60	\$63.40	\$67.60
25,000 to 100,000	120	52.80	62.40	80.40
5,000 to 25,000	120	49.20	57.60	73.20
Under 5,000	120	44.40	52.80	67.20

The state-wide rates approved by the W.P.A. Administrator in New York were the same as those shown above where the population of the largest municipality was over 100,000.



### Making Up Of Lost Time by W.P.A. Labor

Since the issuance of W.P.A. Administrative Order No. 56, dated May 18, 1937, W.P.A. employees have been given every reasonable opportunity to make up allowable lost time. Regulations in effect since 1940 provided that in no case should any project wage employee be permitted to accumulate allowable lost time in excess of 65 hours.

### Transportation

All of the district leaders and several of the state leaders are provided with Government-owned cars for use in connection with their supervisory activities. Most of these automobiles are of the coach type and were purchased with regular funds. However, 18 sedan delivery trucks were bought from W.P.A. money during 1935 and 1939 and assigned to some of the district leaders whose cars were unserviceable for long trips. Instead of turning in their old machines, the cars have been used for transporting W.P.A. crews. During 1939 arrangements were made to obtain 16 half-ton Dodge trucks, with pick-up bodies, from the Bureau of Entomology and Plant Quarantine Office at Greenfield, Mass. A total of 26 Government cars were available for transporting W.P.A. employees assigned to blister rust control work in the Northeastern States during 1941.

All W.P.A. workers on our project travel to and from work on their own time. Instructions have been issued to the supervisory personnel to provide transportation where the daily cost to the worker exceeded car fare, normally 20 cents per day. In many instances, especially in Vermont and Massachusetts, towns have provided transportation for our W.P.A. crews. During 1941, whenever transportation was necessary at Government expense and where no federal cars were available, security wage workers were authorized to use their privately-owned automobiles at the rate of 4 cents per mile.

### Safety Measures

Copies of all W.P.A. instructions concerning safety regulations have been furnished the supervisory personnel in the Northeastern States and the field men instructed accordingly. Each crew, consisting of 3 to 6 men, is provided with a first-aid kit and the foreman is responsible for applying any first-aid measures that may be required. Considerable confusion existed as to the application of the automobile regulations and the inspection of the machines by W.P.A. officials. Only a few inspections have been made. Red flags and flares have also been provided for all cars transporting W.P.A. workers on our project. Experienced drivers have been selected to operate the Government cars assigned to the project, and all of these drivers have been furnished with Government operators' licenses.



Injuries and Compensation to W.P.A. Workers

During the period July 29, 1935 to December 31, 1941, a total of 12,510 security-wage workers have been employed for 7,264,618 man hours on the W.P.A. blister rust control activities in the Northeastern States. In spite of the large force of men employed, only 667 alleged injuries were reported up to December 31, 1941. The following summary shows a classification of the alleged injuries sustained during the entire program.

Table 39 - Classification of Alleged Injuries Sustained on W.P.A.  
Blister Rust Control Project in Northeastern States  
(By States)

State	No. Alleged Injuries, By Classes															
	Poison Oak or Ivy		Infections		Blood Poisoning		Fractures		Sprains Cuts & Bruises		Organic		Misc.		Total	
	1941	1935 to 1941	1941	1935 to 1941	1941	1935 to 1941	1941	1935 to 1941	1941	1935 to 1941	1941	1935 to 1945	1941	1935 to 1941	1941	1935 to 1941
Maine	1	23	-	10	-	2	-	-	-	12	-	9	-	1	1	57
N.H.	1	17	-	7	-	-	-	1	-	34	-	12	-	4	1	75
Vt.	2	62	-	27	-	2	-	4	-	49	2	37	-	9	4	190
N.J.	2	38	-	10	-	-	-	2	3	30	1	18	-	3	6	101
P.I.	-	3	-	-	-	-	1	2	-	2	-	1	-	-	1	8
Conn.	-	2	-	2	-	-	-	-	-	-	-	2	-	-	-	6
N.Y.	-	43	1	16	-	1	1	2	2	46	4	29	-	13	8	152
N.C.	-	1	-	-	-	-	-	-	-	1	-	1	-	-	-	3
Penna.	2	27	-	8	-	-	-	4	-	22	4	15	-	1	6	75
Totals	8	216	1	80	-	5	2	15	5	198	11	122	-	31	27	667
Total	29.6	32.4	3.7	12.0	-	0.7	7.4	2.3	18.5	29.7	40.8	18.3	-	4.6	100.0	100.0

By Years

Year	Poison Oak or Ivy	Infections	Blood Poisoning	Fractures	Sprains Cuts & Bruises	Organic	Misc.	Total
1935	20	14	2	3	31	11	10	91
1936	92	27	1	6	81	54	12	273
1937	28	11	1	1	16	12	1	70
1938	29	8	-	-	19	12	2	70
1939	16	14	-	1	28	15	2	76
1940	23	5	1	2	18	7	4	60
1941	8	1	-	2	5	11	-	27
Totals	216	80	5	15	198	122	31	667

On July 25, 1940, one of our W.P.A. laborers in Steuben County, N.Y. was killed by lightning while on official duty. Several other members of the crew were stunned by the bolt, but escaped injury. The men were en route from the woods to a road where their automobile was parked. The father of this fatally injured employee has been awarded compensation benefits for a period of 8 years beginning July 24, 1940. One other death resulting from a traumatic injury occurred in New York during 1935. In this instance, meningitis resulted from a twig piercing the ear of the employee.



Another W.P.A. employee in New York died as a result of heart trouble during 1933 after being treated since August, 1933 for infection which developed from a blood clot on the right hand. This man was awarded compensation benefits to February 17, 1935, when he died from heart trouble on March 14, 1935.

As indicated in Table 39, nearly one third of the total injuries to December 31, 1941 were due to ivy or oak poisoning, while about 30% were sprains, cuts and bruises. The majority of the 122 organic injuries were to the eyes, but there was no case where the sight was lost. Practically all of these eye injuries were caused by twigs of trees. Fifteen cases of fracture have been reported including one instance where an employee's leg was broken as a result of an automobile accident. Only one other minor auto accident involving a W.P.A. employee has been reported for the duration of the program.

**Table 40 -Number of Accidents Per 100 W.P.A. Employees\* And Compensation Payments Made to Such Employees Injured on Blister Rust Control Work in Northeastern States**

(Summary of payments compiled from reports received from Compensation Commission)

1941

State	Total No. Men* Employed	Total Man. Hours Employment*	Total No. Alleged Injuries	No. Injuries Per 100 Employees	No. Men Paid Compensation	Total Amount Paid	Average Amount Paid Per Case
Maine	246	92,330	1	0.4	1	\$6.93	\$6.93
N. H.	158	75,339	1	0.6	-	-	-
Vt.	180	62,582	4	2.2	1	\$95.81	\$23.95
Mass.	155	66,732	6	3.9	1	\$1.06	\$1.77
R. I.	22	8,756	1	4.5	-	-	-
N. Y.	175	99,824	8	4.6	5	\$205.42	\$41.08
Penna.	194	59,623	6	3.1	-	-	-
Totals	1,130	465,616	27	2.4	8	\$1,209.22	\$151.14

July 29, 1935 to December 31, 1941

Maine	2,187	2,269,805	57	2.6	16	\$116.81	\$7.30
N. H.	2,165	1,227,482	75	3.5	12	\$82.19	\$7.55
Vt.	1,771	875,636	190	10.7	59	\$1,451.06	\$24.68
Mass.	1,179	802,636	101	8.6	3	\$588.55	\$19.62
R. I.	155	94,563	8	5.2	1	\$295.00	\$295.00
Conn.	297	147,083	6	2.0	1	\$6.67	\$6.67
N. Y.	3,041	2,002,368	152	5.0	57	\$3,600.90	\$63.27
N. J.	22	10,870	3	10.3	-	-	-
Penna.	1,686	554,175	75	4.4	6	\$533.33	\$88.89
Totals	12,510	7,264,618	667	5.3	120	\$3,640.52	\$55.34

\* Security Wage workers only.

The 1941 compensation payment in Vermont was in connection with an injury sustained during 1938, while the 1941 total in New York includes \$600.00 paid to one employee who was injured in 1936 and awarded compensation benefits to February 17, 1935. The 1941 compensation in New York also includes \$133.80 paid to the beneficiary of a W.P.A. employee who was killed by lightning on July 25, 1940 while employed on our project in that state.

No reports have been received from the Compensation Commission as to the cost of medical treatment and hospitalization of the injured employee.



Activities of The Regional Office - Cambridge, Massachusetts  
(Especially as related to the W.P.A. Program)

Duties

The Regional Office of the Bureau of Entomology and Plant Quarantine at Cambridge, Mass. is responsible for the general supervision of all blister rust control activities in the nine Northeastern States. Practically all office work in connection with the administration of control activities under the W.P.A. Program, which began July 29, 1935, has been handled by the Regional Office. This office work has included the following items: - preparation of project applications, budgets, plans and some contracts; preparation of payrolls for a maximum of 4,457 employees; auditing of all expense accounts and 1034 vouchers or invoices for purchases or other services; purchase of supplies and equipment for entire region or arranging for such purchases through the local Procurement Office; maintenance of property records; administrative record work and correspondence in connection with compensation cases; issuance of instructions to field personnel; and preparation of news items and weekly, semi-monthly, monthly, fiscal and calendar year reports covering all phases of control activities.

In addition to their supervisory activities, employees of the Regional Office have conducted numerous special investigations, in cooperation with the field personnel, to determine pine infection conditions, effectiveness of blister rust control, efficiency of Ribes eradication, improvements in control methods, etc.

Personnel

The regular personnel of the Regional office during 1941 consisted of the Senior Pathologist, an Associate Plant Pathological Inspector, an Administrative Assistant, a Secretary Stenographer, and two Agents, the latter being paid from W.P.A. Administrative funds during the entire year. One temporary appointee was also employed for  $1\frac{1}{2}$  months to assist on investigational work. In addition, an average of eight W.P.A. clerks, all certified workers, were employed during 1941.

Payroll Procedure

Each W.P.A. foreman was responsible for recording daily on Form EQ 205 the time worked by each employee under his direct supervision. At the end of each payroll period (semi-fiscal month during 1941), the completed time sheet was certified by the W.P.A. foreman and forwarded to the district leader. The latter checked the data and certified as to its correctness before transmitting the original copy of the Form EQ 205 to the Cambridge Office, where it was again audited before the payroll was prepared. Usually the payrolls were completed and forwarded to the Treasury Accounts Office at Boston, Mass. the same day the time sheets were received.



During the calendar year 1941 a total of 1,043 W.P.A. payrolls were prepared at the Cambridge Office. The intervals between the dates the payrolls were transmitted to the Treasury Accounts Office and the dates the checks were issued are shown in the following table.

Table 41 - Time Involved From Date Payroll Vouchers Transmitted To Treasury Accounts Office To Date Checks Were Issued

No. Days Involved	Calendar Year 1941		July 29, 1935 to December 31, 1940	
	Total No. Vouchers	Percent Total	Total No. Vouchers	Percent Total
1	22	2.1	1,229	14.1
2	329	31.6	2,282	26.2
3	271	26.0	2,048	23.5
4	233	27.1	1,544	17.3
5	74	7.1	734	8.4
6	19	1.8	438	5.0
7	16	1.5	398	4.6
8	13	1.3	116	1.3
9	2	(	28	(
10	6	1.5	15	0.8
20 - 20	6	(	21	(
Totals	1,043	100.0	8,710	100.0

As indicated in Table 41, nearly 87% of the 1941 vouchers were paid in from one to four days after they were transmitted to the Treasury Accounts Office. Due to a delay in issuing warrants for W.P.A. funds under the new appropriation in July, 1941, it was necessary for the local Treasury Accounts Office to hold up payment of some of our July payrolls for over two weeks.

Blanket advance encumbrances were set up for each official project covering the total estimated amount to be obligated for each semi-fiscal month payroll period during 1941. Prompt action was taken by the Treasury Department in cancelling any unobligated payroll encumbrances, the necessary Forms 454 being issued by our office.



## Procurement Procedure

The Procurement Division of the Treasury Department authorized the Senior Pathologist and his assistant to act as procurement representatives in making purchases of equipment, supplies and materials required for immediate official use where the amount did not exceed \$50.00. Whenever practicable, however, requisitions were submitted to the Procurement Division for purchases where immediate delivery was not essential.

Monthly blanket encumbrances were used for each official project to set up funds for each type of service such as: supplies and materials, repairs to Government cars, office rent, auto storage, etc. However, effective October 1, 1941, the Procurement Division required separate monthly encumbrances for each contractual service, which materially increased the amount of office work in preparing the necessary documents.

Memorandum purchase orders were issued by the Regional Office, state and district leaders to cover purchases made without reference to the Procurement Division. Invoices for such purchases accompanied by copies of the memorandum purchase orders and receiving and inspection reports were transmitted through the Regional Office to the Procurement Division where all 1034 vouchers were prepared before the accounts were sent to the Treasury Accounts Office for payment. Copies of these paid vouchers, as well as those for purchases made by the Procurement Division, were furnished our office for accounting purposes.

In cases of emergency, the blister rust control leaders were permitted to make purchases of small supplies and equipment (usually limited to two or three dollars) in the field, and claim reimbursement in their monthly expense voucher - Form 1012.

## Payment of Form 1012 and 1034 Vouchers

Prompt service was rendered by the Treasury Department in the payment of Form 1012 expense accounts, all such vouchers during 1941 being paid within 16 days from the time they were transmitted by the Cambridge Office. However, there were long delays in the payment of invoices covering purchases and other services for which Form 1034 vouchers were prepared by the Procurement Division of The Treasury Department. Numerous complaints were received from vendors and our office contacted the Procurement Division several times in an effort to expedite the payment of such accounts. At one time, that office was literally swamped with unpaid accounts. As indicated in Table 42, only 47.5% of the Form 1034 vouchers were paid within 30 days from the date the invoices were transmitted to the Procurement Division, and 14.5% were not paid until after 60 days had elapsed.



Table 42 - Tabulation Showing Time Involved From Date 1012 Vouchers and Other Invoices Transmitted To Treasury Department To Date Payment Made

<u>Days Involved</u>	<u>Total Number During 1941</u>		<u>Percent of Total</u>	
	<u>1012</u> <u>Vouchers</u>	<u>Other</u> <u>Invoices*</u>	<u>1012</u> <u>Vouchers</u>	<u>Other</u> <u>Invoices*</u>
1 - 10	329	87	93.7	5.0
11 - 20	22	312	6.3	17.8
21 - 30	0	433	-	24.7
31 - 40	0	309	-	17.6
41 - 50	0	196	-	11.3
51 - 60	0	159	-	9.1
Over 60	0	254	-	14.5
Total	351	1762	100.0	100.0

\* Form 1034 vouchers.



Accomplishments in Blister Rust Control Under the W.P.A. Program  
in The Northeastern States

Ribes Eradication Work During 1941

The 1941 Ribes eradication activities under the Federal Agency W.P.A. projects in six of the Northeastern States began early in May (on April 28th in Massachusetts) and continued until the end of October except in New Hampshire, where the work was terminated on October 15th. Control work was performed in 205 townships in 70 counties and resulted in 291,129 acres being cleared of 3,462,809 wild Ribes and 8,420 cultivated bushes which required 40,137 man days labor. The area cleared of Ribes on these W.P.A. projects represents 50.6% of the total acreage examined in the Region during 1941.

Due to the shortage of W.P.A. labor, it was necessary to use three or four man crews on the 1941 work in several of the districts. Reports from our leaders indicate that the use of these smaller units was very practicable especially on re-eradication work where the Ribes were not abundant. Only 3.3 bushes per acre were destroyed on the 59,393 acres examined by the W.P.A. crews in Massachusetts during 1941.

Table 43 Distribution of Work and W.P.A. Personnel  
Employed on Ribes Eradication Work in Northeastern States - 1941

State	No Counties in Which Work Performed	No. Towns Where Work Performed	No. W.P.A. Security Wage Workers	
			Maximum*	Average**
Maine	13	25	115	98
N. H.	8	20	99	75
Vt.	7	18	84	65
Mass.	6	20	68	57
R.I.	2	2	16	13
N.Y.	21	59	98	84
Penna.	13	61	106	73
Totals	70	205	586	465

\* Maximum number employed during a single pay period.

\*\* Average number employed during period May 3 to October 31, 1941.



Table 44 - Ribes Eradication Work Performed Under W.P.A. Program in Northeastern States During 1941

(Excludes nursery sanitation and cultivated black currant elimination)

State	Type of Erad.	Acreage		No. Ribes Pulled		Total Man Days	Cost		W.P.A.	Total	Per Acre	
		Total Worked	Pine Protected	Wild	Cult.		Local Coop.	State			Cost	Ribes
Maine	Initial	18,364	6,646	343,604	67	2,983	279.93	104.81	10,248.49	10,633.23	.579	16.7
	Re-Erad.	32,818	12,115	587,045	166	5,740	952.66	173.78	19,102.33	20,228.77	.616	17.2
	Total	51,212	18,761	930,649	233	8,723	1232.59	278.59	29,350.82	30,862.00	.603	18.9
N. H.	Initial	6,138	3,730	74,703	2903	1,409	-	-	0 5,228.87	5,228.87	.652	12.2
	Re-Erad.	21,126	13,650	253,602	151	3,966	-	-	2 15,163.16	15,163.16	.713	12.0
	Total	27,264	17,380	328,312	3054	5,375	-	-	20,392.03	20,392.03	.748	12.0
Vt.	Initial	13,112	2,689	380,753	90	4,253	1451.04	-	13,428.71	14,879.75	1.13	29.0
	Re-Erad.	3,895	1,200	83,173	28	1,098	352.60	-	3,641.55	3,994.15	1.03	21.4
	Total	17,007	3,889	463,926	118	5,351	1803.64	-	17,070.26	18,873.90	1.11	27.3
Mass.	Initial	3,504	669	10,512	71	245	18.00	100.98	713.09	332.07	.237	3.0
	Re-Erad.	55,889	15,489	182,604	2027	4,574	272.53	1,165.13	15,095.10	16,532.76	.296	3.3
	Total	59,393	16,158	193,116	2098	4,819	290.53	1,266.11	15,808.19	17,364.83	.292	3.3
R. I.	All Re.	8,479	4,796	5,605	19	1,078	-	-	4,048.26	4,048.26	.477	0.7
	Initial	55,295	19,925	629,371	1383	5,754	6.40	4,199.40	18,562.33	23,068.13	.417	11.4
	Re-Erad.	47,050	18,011	330,335	366	3,538	267.20	4,227.67	19,387.66	14,882.53	.316	7.0
N. Y.	Total	102,345	37,936	959,706	1749	9,292	273.60	8,727.07	28,949.99	37,950.66	.371	9.4
	Initial	24,621	4,791	575,534	1097	5,424	-	-	19,119.04	19,119.04	.777	23.4
	Re-Erad.	308	119	5,961	22	75	-	-	252.49	252.49	.312	7.4
Penn.	Total	25,129	4,910	581,495	1119	5,499	-	-	19,371.53	19,371.53	.762	22.3
	Initial	121,034	38,450	2,014,477	5611	20,068	1755.37	4,705.19	67,300.53	73,761.09	.609	15.8
	Re-Erad.	170,095	65,380	1,448,332	2809	20,069	1844.99	5,566.58	67,690.55	75,102.12	.442	10.5
Totals	Total	291,129	103,830	3,462,809	8420	40,137	3600.36	10,271.77	134,991.08	148,863.21	.511	11.9

Basis of costs: The cost figures are based on the total cost of laborers and foremen employed in locating & pulling Ribes; transportation of crews; and miscellaneous expenses for trail paper, picks, etc. The cost of any supervisors assigned to the W.P.A. control projects is not included in the above expenditures for Ribes eradication.

(1) Includes \$36.20 B. E. & P. Q. funds. (2) Includes \$101.95 B. E. & P. Q. funds. (3) Includes \$77.12 B. E. & P. Q. funds.



Table 40 - Ribes Eradication Work Performed Under W. P. A. Program in Northeastern States  
During Period 1935-1941, Inclusive

(Excludes nursery sanitation and cultivated black current elimination)

Type of Erad.	Total Acreage Worked	No. Ribes Pulled		Total Man Days	Local Coop	Cost		Per Acre			
		Wild	Cult.			State	W. P. A.		Total	Cost	Ribes
Initial	300,235	13,473,445	7,938	67,294	3,818.26	2,856.89	231,552.95	238,228.10	.793	44.9	.22
Re-Erad.	340,646	7,006,671	9,157	61,728	8,282.53	2,401.63	209,904.61	220,588.77	.648	20.6	.18
Total	640,881	20,480,116	17,095	129,022	12,100.79	5,258.52	441,457.56	458,816.87	.716	32.0	.20
Initial	253,127	9,990,681	10,533	56,937	635.06	175.99	(1) 194,310.85	195,121.90	.771	39.5	.22
Re-Erad.	315,927	5,965,944	2,244	57,534	1,766.51	164.88	(2) 198,236.67	200,168.06	.634	18.9	.18
Total	569,054	15,956,622	12,777	114,471	2,401.57	340.87	392,547.52	395,289.96	.695	28.0	.20
Initial	184,649	6,225,321	3,242	58,939	4,639.01	172.08	177,578.31	192,389.40	1.04	33.7	.32
Re-Erad.	83,291	1,729,304	1,241	22,350	4,382.73	131.26	70,323.27	74,837.26	.899	20.8	.27
Total	267,940	7,954,625	5,183	81,289	19,021.74	303.34	247,901.58	267,226.66	.997	29.7	.30
Initial	172,393	1,408,754	16,559	17,367	3,132.76	1,285.91	65,356.49	69,775.16	.405	8.2	.10
Re-Erad.	379,834	3,900,408	11,745	52,188	10,338.21	7,569.97	(3) 195,326.09	213,234.27	.561	10.3	.14
Total	552,227	5,309,162	28,304	69,555	13,470.97	8,855.88	260,682.58	283,009.43	.512	9.6	.13
Initial	8,710	15,381	791	1,944	-	-	7,315.22	7,315.22	.840	1.8	.22
Re-Erad.	59,164	84,061	3,221	9,099	-	294.73	34,133.23	34,427.96	.582	1.4	.15
Total	67,874	99,442	4,012	11,043	-	294.73	41,448.45	41,743.18	.615	1.5	.16
Initial	16,227	87,906	2,138	2,287	-	22.94	8,944.53	8,967.47	.553	5.4	.14
Re-Erad.	46,053	654,926	906	12,095	684.00	42.39	46,290.27	47,016.86	1.02	14.2	.26
Total	62,280	742,832	3,044	14,382	684.00	65.53	55,234.80	55,984.33	.899	11.9	.23
Initial	759,027	20,471,407	28,516	172,672	182.40	79,497.46	632,779.31	712,459.17	.939	27.0	.23
Re-Erad.	236,540	3,330,064	3,732	35,436	444.80	20,739.45	126,062.55	147,246.80	.623	14.1	.15
Total	995,567	23,801,471	32,248	208,108	627.20	100,236.91	758,841.86	859,705.97	.864	23.9	.21
Initial	3,625	21,127	299	951	-	298.10	3,862.30	4,160.40	1.15	5.8	.26
Re-Erad.	1,447	16,956	15	392	-	-	1,631.36	1,631.36	1.15	12.0	.28
Total	5,072	38,083	314	1,343	-	298.10	5,493.66	5,791.76	1.15	7.6	.27
Initial	229,326	12,283,134	44,425	76,914	-	336.70	(4) 285,061.30	285,398.00	1.24	53.6	.34
Re-Erad.	16,276	1,065,243	582	7,443	-	-	27,602.40	27,602.40	1.70	65.4	.46
Total	245,602	13,348,377	15,007	84,357	-	336.70	312,663.70	313,000.40	1.27	54.3	.34
Initial	1,927,319	63,977,156	85,141	455,305	22,407.49	84,646.07	1,606,761.26	1,713,844.82	.889	33.2	.24
Re-Erad.	1,479,148	23,753,574	32,843	258,265	25,898.78	31,344.51	909,510.45	966,753.74	.654	16.1	.17
Total	3,406,467	87,730,730	117,984	713,570	48,306.27	115,990.58	2,516,271.71	2,680,568.56	.787	25.8	.21

Includes \$36.20 B. P. and P. O. funds. (2) Includes \$101.35 B. P. and P. O. funds. (3) Includes \$8.53 B. P. and P. O. funds. (4) Includes \$77.12 B. P. and P. O. funds. (5) Includes \$8.53 B. P. and P. O. funds.



Table 46 - Ribes Eradication Work Performed Under W.P.A. Program in Northeastern States  
During Period 1935 - 1941, Inclusive

(Excludes nursery sanitation and cultivated black currant elimination)  
(By Years)

Year	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Cost			Per Acre	
			Wild	Cult.		Local Coop.	State	W.P.A.	Cost	Ribes
1936	Initial	263,753	3,460,626	12,322	77,573	2,057.57	11,232.79	262,032.23	279,408.09	1.02
	Re-Erad.	156,883	2,545,100	3,552	35,513	2,193.55	2,334.21	127,308.20	132,336.66	844
	Total	420,643	12,005,726	22,984	113,086	4,250.12	14,174.70	593,407.13	411,792.75	979
1938	Initial	727,485	29,901,209	30,843	196,039	8,452.72	23,247.33	715,199.52	743,906.63	1.03
	Re-Erad.	450,011	10,627,602	15,137	95,291	5,956.15	4,003.29	347,746.90	357,586.54	795
	Total	1,177,496	40,528,811	45,980	291,330	14,395.87	27,250.63	1,062,946.42	1,104,592.97	938
1937	Initial	184,382	6,901,378	4,936	41,050	2,492.47	17,074.16	143,791.44	163,358.07	886
	Re-Erad.	127,028	2,037,375	1,554	19,132	2,505.61	4,409.69	69,807.63	76,723.93	604
	Total	311,410	8,938,753	6,490	60,182	4,998.08	21,483.85	213,599.07	240,082.00	771
1938	Initial	190,518	4,297,834	7,303	39,919	2,359.04	9,996.53	143,269.51	155,624.88	813
	Re-Erad.	192,494	2,265,118	5,555	38,681	4,892.03	4,586.07	(1)100,373.00	109,851.10	571
	Total	382,012	6,562,952	12,858	68,600	7,251.07	14,582.60	243,642.31	265,475.98	623
1939	Initial	222,633	5,020,144	12,713	42,585	5,117.21	9,965.25	145,634.35	157,011.51	708
	Re-Erad.	133,038	2,335,024	2,403	31,277	5,078.10	5,676.52	101,974.73	115,729.05	534
	Total	355,671	7,355,168	15,116	74,033	8,195.31	14,559.67	250,609.48	273,340.56	650
1940	Initial	217,707	5,480,398	4,313	39,059	4,150.51	9,492.66	125,466.43	137,146.55	630
	Re-Erad.	174,569	1,302,010	1,790	28,027	3,447.45	4,217.45	91,609.64	99,374.54	533
	Total	392,276	7,354,404	6,103	68,163	5,637.76	13,707.11	217,076.22	256,421.09	588
1941	Initial	123,654	2,014,497	5,611	20,023	1,765.37	4,705.19	(2)67,300.53	73,761.03	602
	Re-Erad.	170,095	1,443,322	2,602	27,069	1,844.92	5,336.58	(3)67,690.55	75,102.12	442
	Total	293,749	3,457,819	8,213	47,092	3,610.29	10,041.77	134,991.08	148,863.21	511
Total	Initial	1,927,313	32,877,136	60,141	455,305	32,407.49	94,546.07	1,605,761.23	1,713,814.32	823
	Re-Erad.	1,479,148	23,753,574	32,843	258,265	25,306.73	31,244.51	909,510.45	966,755.74	654
	Total	3,406,461	57,730,710	117,984	713,570	48,306.27	115,990.58	2,516,371.71	2,680,565.56	787

(1) Includes 28.93 B.B. & P.O. funds.

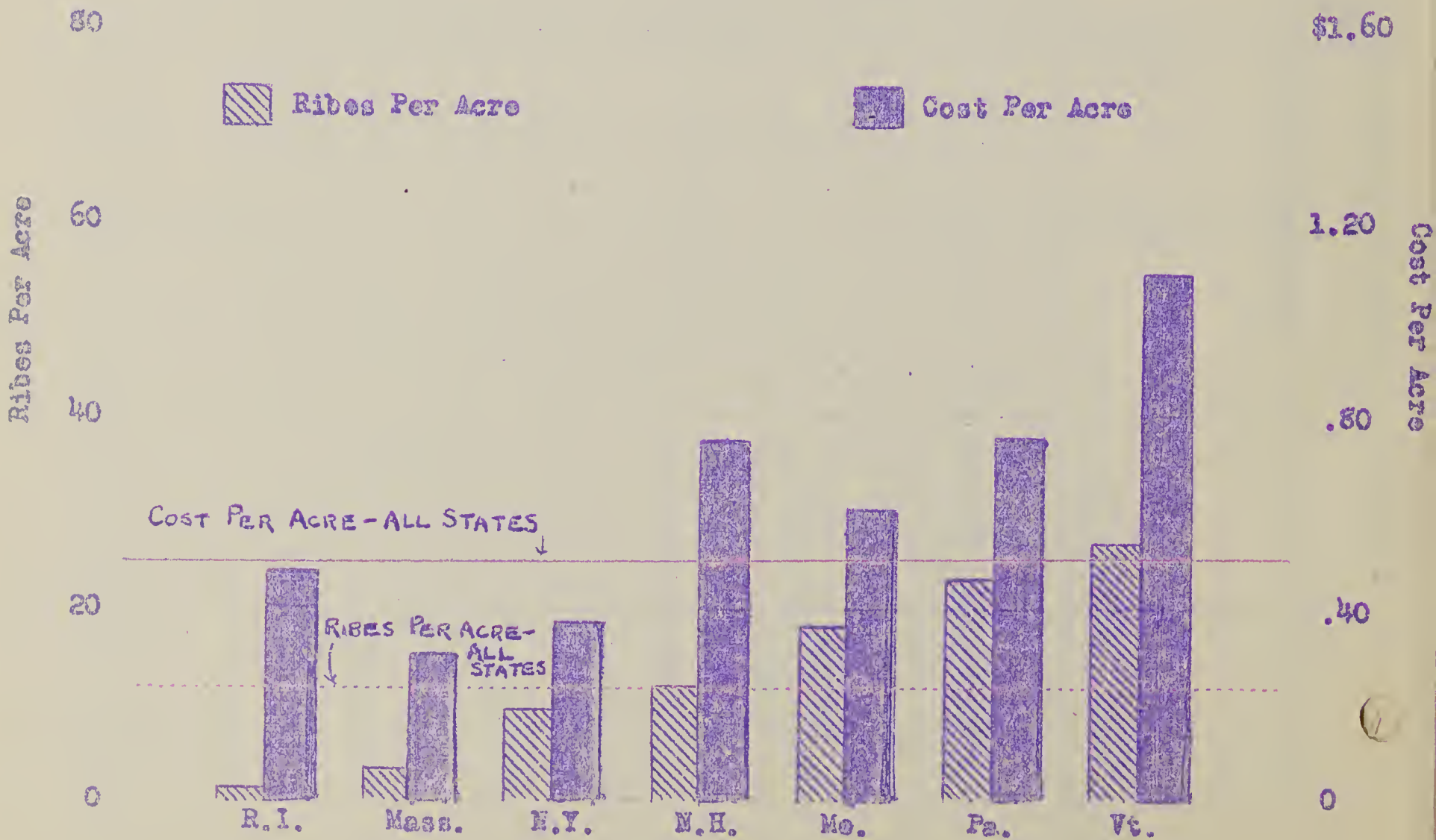
(2) Includes 3113.32 B.B. & P.O. funds.

(3) Includes 2101.56 B.B. & P.O. funds.

Items of Costs: Same as listed for Table 44.

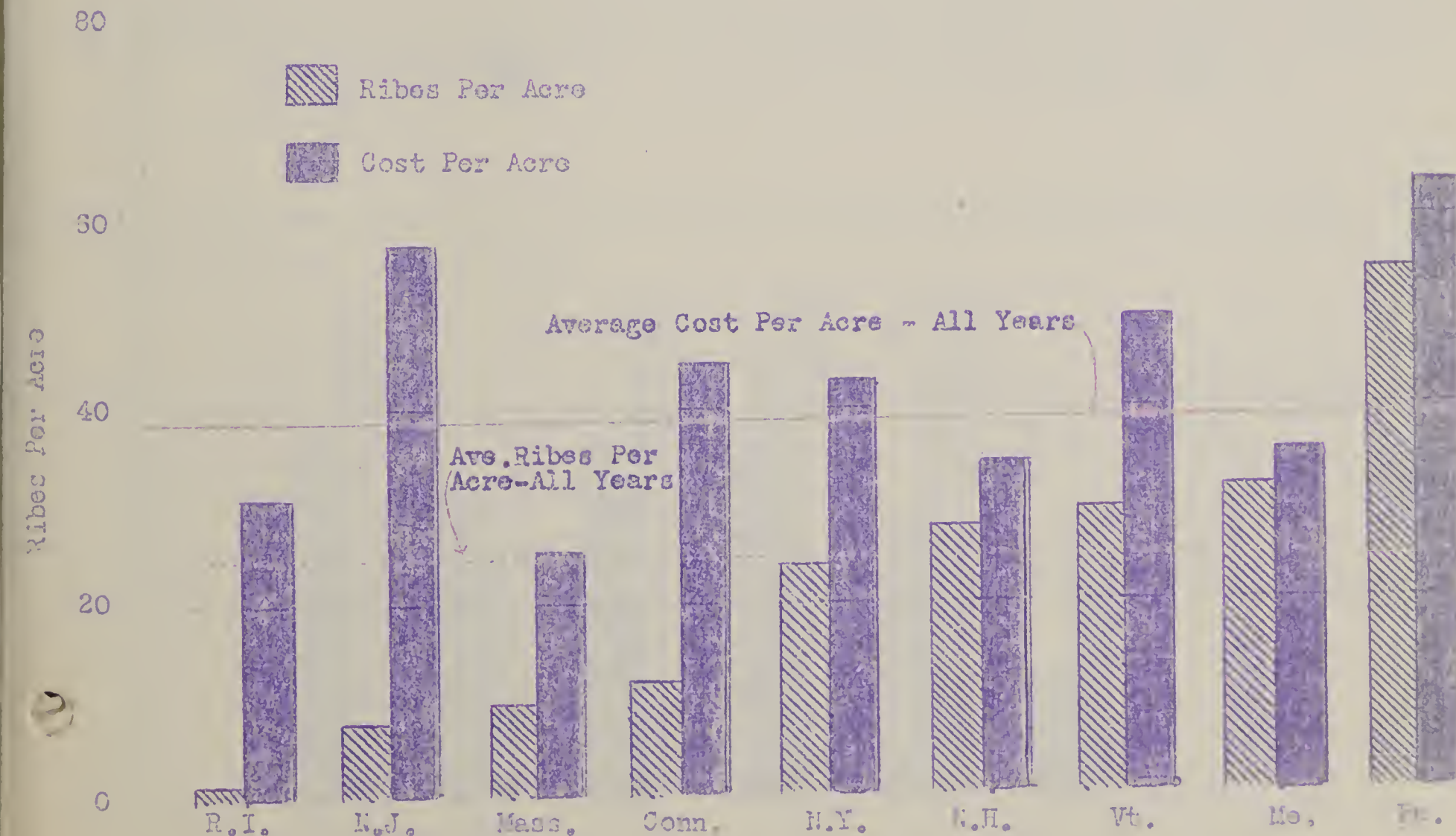
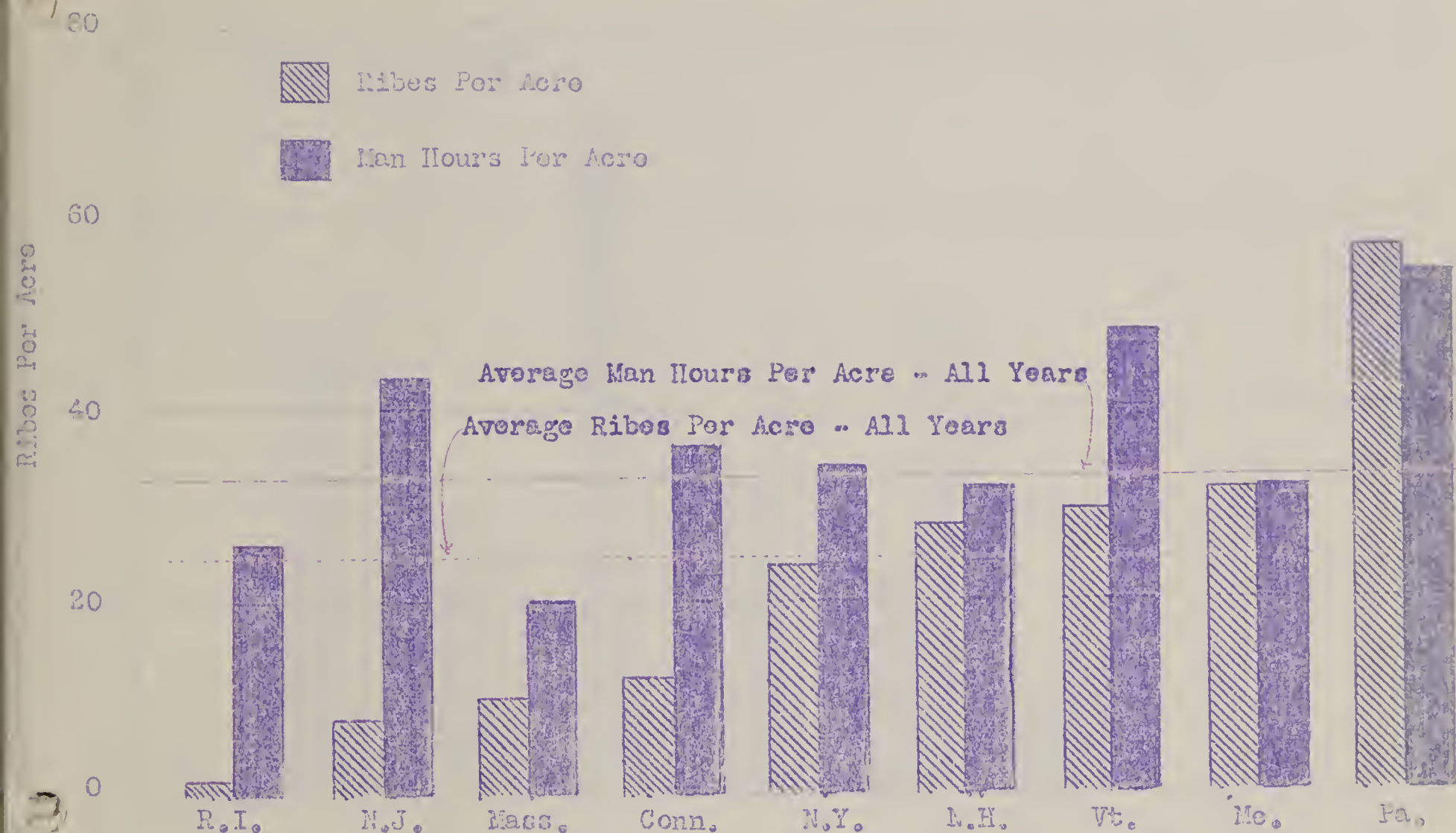


COMPARISON, BY STATES, OF PER ACRE VALUES FOR RIBES ERADICATION WORK  
W.P.A. PROGRAM - NORTHEASTERN STATES - 1941





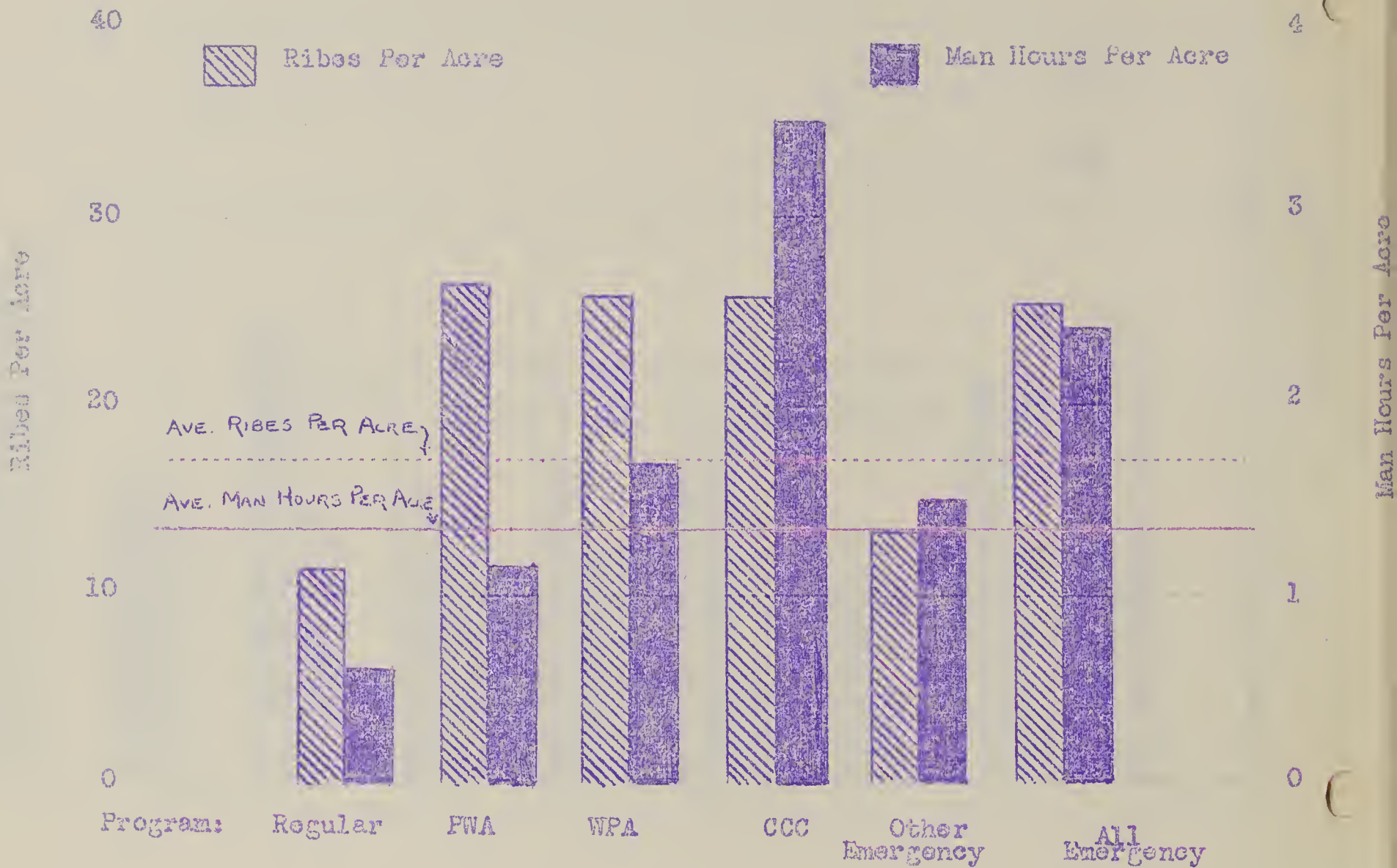
COMPARISON OF COSTS OF WINE MAKING FOR WINE PRODUCTION WORK  
W.P.A. PROGRAM - NORTHEASTERN STATES - 1934 to 1941, INCLUSIVE





COMPARISON, BY PROGRAMS, OF PER ACRE VALUES FOR RIBES ERADICATION WORK

NORTHEASTERN STATES - 1935 to 1941, INCLUSIVE





## Supervision of 1941 W.P.A. Ribes Eradication Work

It was not necessary to appoint any non-relief W.P.A. supervisors during the 1941 season as our district blister rust control leaders were able to give adequate supervision to the W.P.A. control activities with the assistance of a few state employees and experienced W.P.A. workers. One state-paid supervisor was assigned to each of the four districts in Maine and these men assisted in directing control activities under the Regular and W.P.A. Programs, their costs being apportioned to each program. State employees were also assigned to assist the district leaders in supervising W.P.A. work in Massachusetts and New York. One experienced certified W.P.A. employee in New Hampshire was used as a supervisor for a short period, while in Pennsylvania arrangements were made to have one experienced W.P.A. worker assigned as a General Foreman, Grade 4 (wage rate \$110.60 per fiscal month) during the period May 28 to July 2, 1941 when he assisted on supervisory work.

Table 47 - Supervision of Ribes Eradication Work Performed  
Under W.P.A. Program in Northeastern States During 1941

State	No. Supervisors	Man Days Worked By Supervisors	Total Cost of Supervisors			
			State	W.P.A.	D.E. & P.Q.	Total
Maine	4	326	\$2,023.18	-	-	\$2,023.18
N. H.	1	31	-	\$200.85	-	200.85
Mass.	1	131 1/2	\$221.80	-	-	\$221.80
N. Y.	8	201 1/2	1,199.03	-	-	1,199.03
Penn.	1	24	-	154.80	37.00	211.80
Totals	15	714	3,843.81	355.25	37.00	4,215.00

D.E. and P.Q. expenditure in Pennsylvania was for travel expenses of supervisor.

## Pine and Control Area Mapping

During the period January 1 to April 30 and from November 1 to December 31, 1941, pine and control area mapping was the major field activity on the Federal Agency W.P.A. projects conducted in six of the Northeastern States. The 1941 surveys resulted in 601,777 acres being mapped in detail and 453 miles of control area boundary lines painted in the field. In addition, 1,361,336 acres were definitely eliminated from control work because the pine in these areas did not meet minimum stocking requirements. The 1941 survey work required 14,513 man-days labor by W.P.A. employees and a few state men who assisted on such activities in New York. The detailed accomplishments in each state during 1941 and for all years are shown in the following two summaries.



Table 48 - Summary of Pine and Control Area Mapping Under W.P.A.  
Program in Northeastern States During 1941

State	No. Towns	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost				
						Town	State	B. E. and P. O.	W.P.A.	Total
Maine	26	108,385	117,810	-	3,302	-	30.00	-	13,871.95	13,901.95
N. H.	46	101,875	262,265	-	2,943	-	98.56	16.92	13,752.23	13,867.71
Vt.	20	76,365	210,413	18	1,455	254.63	-	-	5,912.55	6,167.18
Mass.	22	62,573	133,519	59	1,408	-	53.20	-	6,330.24	6,383.44
N. Y.	33	217,741	373,359	-	4,193	-	6,362.21	-	12,852.46	19,224.67
Penna.	94	34,838	*	378	1,512	-	-	-	5,830.60	5,830.60
Totals	290	601,777	1,361,386	453	14,813	254.63	6,523.97	16.92	58,600.01	65,355.53

\* In Pennsylvania, several hundred thousand acres of non-pine land were eliminated, but no definite record kept.

Basis of costs: Includes actual cost of personnel assigned to mapping work, transportation and expenses for mapping equipment.

Table 49 - Summary of Pine and Control Area Mapping Under W.P.A.  
Program in Northeastern States, 1935-1941, Inclusive

(By States)

State	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost				
					Towns & Counties	State	B. E. & P. O.	W.P.A.	Total
Maine	1,691,782	4,069,460	1,808 $\frac{1}{2}$	32,743	-	2,509.35	17.60	132,505.94	135,032.89
N. H.	1,210,088	247,908	-	31,995	843.11	379.70	13.17	140,573.03	141,714.01
Vt.	1,455,303	3,739,507	328	20,705	2,190.94	19.60	-	76,251.48	78,462.02
Mass.	802,521	1,027,763	1,175	17,739	2,413.10	1,708.41	41.75	75,043.91	79,207.17
N. I.	73,427	-	-	862	-	820.25	-	3,443.36	4,263.61
Penn.	82,417	131,017	284	3,446	175.00	619.70	420.79	14,633.31	15,848.30
N. Y.	3,489,657	1,961,801	2,399	36,470	-	22,425.77	25.11	147,959.42	170,410.30
Penn.	433,895	*	4,184	15,284	-	-	4.00	65,602.68	65,606.68
Totals	9,239,070	11,177,457	10,678 $\frac{1}{2}$	159,244	5,622.15	28,382.78	526.92	656,013.13	680,544.93

(By Years)

1935	616,026	405,569	1,591	10,937	144.60	1,036.64	-	46,939.28	48,120.52
1936	2,124,601	2,157,787	4,918	32,701	801.00	3,927.96	405.00	153,769.78	158,903.74
1937	2,133,073	2,366,682	1,241	30,257	1,345.20	1,453.10	68.76	129,159.35	132,026.41
1938	1,222,371	1,869,593	747	27,413	1,652.02	3,512.49	36.24	102,432.74	107,633.49
1939	1,703,765	2,004,499	800	26,247	894.18	6,939.40	-	93,873.46	106,712.04
1940	832,427	1,012,041	328 $\frac{1}{2}$	16,876	530.52	4,939.22	-	66,273.51	71,793.25
1941	601,777	1,361,386	453	14,813	254.63	6,523.97	16.92	58,560.01	65,355.53
Totals	9,239,070	11,177,457	10,678 $\frac{1}{2}$	159,244	5,622.15	28,382.78	526.92	656,013.13	680,544.93

\* A large acreage of non-pine land was also eliminated in Pennsylvania, but no definite record was kept.

Basis of costs: Same as Table 48.



### Nursery Sanitation

W.P.A. employees were used on nursery sanitation work performed in the environs of 6 pine growing nurseries in Rhode Island, New York and Pennsylvania during the spring of 1941. This control work assured the continued production of disease-free white pines for use on reforestation projects. A total of 3,526 acres was examined and 143 wild Ribes removed as a result of 59 man days labor. The accomplishments, by states, are shown in Table 50.

Table 50 - Summary of Nursery Sanitation Work Under W.P.A. Program in Northeastern States During 1941  
(All Re-eradication Work)

State	No. Nurseries Worked	Acreage Worked	Ribes Pulled		Total Man Days	Cost				Per Acre
			Wild	Cult.		Indiv.	State & P.O.	W.P.A.	Total	
I.	4	2,163	2	-	14	-	13.41	-	42.32	55.73
Y.	1	1,160	133	-	41	149.60	-	-	3.53	153.13
Penna.	1	215	10	-	4	-	-	9.04	10.24	19.28
<b>Totals</b>	<b>6</b>	<b>3,528</b>	<b>145</b>	<b>-</b>	<b>59</b>	<b>149.60</b>	<b>13.41</b>	<b>9.04</b>	<b>56.08</b>	<b>188.14</b>

Basis of costs:- Includes cost of laborers and foreman while engaged in locating and eradicating Ribes in nursery sanitation areas, and cost of crew transportation. Also includes charge for time of one district leader who assisted on such activities in Pennsylvania.

Table 51 - Summary of Nursery Sanitation Work Under W.P.A. Program in Northeastern States, 1935-1941, Inclusive

State	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Cost				Per Acre
			Wild	Cult.		Indiv.	State & P.O.	W.P.A.	Total	
Maine	Re-Erad	203	187	-	19	-	-	-	70.16	70.16
N. H.	"	508	176	1	151	-	-	-	453.92	453.92
Vt.	"	380	257	75	75	-	21.00	-	210.77	242.77
Mass.	"	1,432	2,526	3	406	-	471.43	-	1,496.76	1,537.19
R. I.	Initial	590	27	45	9	-	-	-	46.30	46.30
	Re-Erad	7,537	56	2	24	-	13.41	-	430.14	474.15
	<b>Total</b>	<b>8,127</b>	<b>83</b>	<b>47</b>	<b>33</b>	<b>-</b>	<b>13.41</b>	<b>-</b>	<b>476.44</b>	<b>520.45</b>
Conn.	Re-Erad	932	53	3	73	-	-	-	171.59	171.59
N. Y.	"	16,195	3,166	2	738	149.60	401.16	-	2,461.23	2,611.99
Penna.	"	2,673	3,123	28	213	307.60	-	9.04	637.24	2,404.15
<b>All States</b>	Initial	690	27	45	9	-	-	-	46.30	46.30
	Re-Erad	29,902	11,543	119	1,742	457.10	210.00	9.04	6,104.21	7,400.35
	<b>Total</b>	<b>30,492</b>	<b>11,570</b>	<b>164</b>	<b>1,751</b>	<b>457.10</b>	<b>210.00</b>	<b>9.04</b>	<b>6,150.71</b>	<b>7,446.65</b>

Basis of costs: - Same as listed for Table 50.

### Elimination of Ribes Nigrum (European Black Currant)

No special black currant elimination work was performed under the W.P.A. Program in the Northeastern States during 1941. The results of such activities under this program during the period 1935-1940, inclusive, in Massachusetts and New York are summarized in the following table.



Table 52 - Summary of Special Ribes Nigrum Elimination Work  
Under W.P.A. Program in Northeastern States, 1935-1941, Inclusive

State		Mass.	N. Y.	Totals
Period		1935-1940	1935-1940	1935-1940
No. properties inspected		177,136	3,117	180,313
No. patches located		844	25	869
No. Ribes Located	Nigrum	4,037	123	4,165
	Other Cult.	604	-	604
No. Ribes Pulled	Nigrum	3,028	123	3,156
	Other Cult.	432	-	432
Total man days		978	103	1,081
Cost	Individuals	\$496.50	-	\$496.50
	State	111.72	\$244.80	356.52
	W. P. A.	4,325.85	182.60	4,508.45
	Total	\$4,934.07	\$427.40	\$5,361.47

#### Blister Rust Canker Elimination Work

W.P.A. laborers were assigned to blister rust canker elimination work on publicly-owned lands in Vermont, Massachusetts and New York during 1941. A total of 156,042 pines were examined and 6,105 fatally-infected trees cut down. In addition, 5,589 branch cankers and 420 stem lesions were removed from 4,602 other diseased pines as a result of 1,776 man days labor. In most instances the work in plantations was combined with pruning since it is generally more practicable to prune the lower branches than to inspect each one for blister rust cankers. Tables 53 and 54 summarize the results of blister rust canker elimination work under the W.P.A. Program during the calendar year 1941 and the period 1935-1941, inclusive.

Table 53 - Results of Blister Rust Canker Elimination Work Under  
W.P.A. Program in Northeastern States During 1941

State	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days	Cost			
				Branch	Stem		Towns	State	W.P.A.	Total
Vt.	36,120	1,181	1,625	2,098	10	418	8.00	34.15	1,589.38	1,631.53
Mass.	12,717	1,303	256	270	7	557	287.25	-	1,904.58	2,191.63
N. Y.	107,205	3,621	2,721	3,221	403	301	-	689.70	2,979.14	3,568.84
Totals	156,042	6,105	4,602	5,589	420	1,776	295.25	623.85	6,478.10	7,392.20

Basis of Costs:- Includes cost of personnel assigned to canker elimination work, transportation, and cost of equipment and supplies.



Table 54 - Results of Blister Rust Canker Elimination Work Under W.P.A. Program in Northeastern States, 1935-1941, Inclusive

State	Est. No. Pines Examined	No. Fatally Infected Pines Cut Down	No. Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days	Cost			
				Branch	Stem		Local Coop.	State	W.P.A.	Total
Ala.	28,581	5,731	638	711	-	219	-	-	770.37	770.37
Cal.	226,489	32,342	18,836	21,030	223	2,491	413.60	31.65	7,752.20	8,197.45
Conn.	116,167	14,956	3,682	4,107	7	3,293	5,416.25	67.28	9,843.62	15,327.15
Del.	1,577,875	119,378	190,702	253,267	1,789	12,420	230.00	2,163.35	48,453.16	50,646.51
Ill.	352,460	4,287	53,927	108,470	1,907	2,742	-	-	10,860.91	10,860.91
Ind.	2,301,572	212,695	267,787	387,605	3,523	21,166	4,539.25	2,292.49	77,806.28	84,637.02

Basis of Costs: - Includes cost of personnel assigned to canker elimination work, crew transportation, and cost of equipment and supplies.

#### State and Local Cooperation on W.P.A. Program

The states and local cooperators spent \$25, 113.75 for control activities during 1941 under the W.P.A. Program, over 66% of the total amount being contributed by the State of New York.

The state funds, totalling \$21,818.91, expended in all states where W.P.A. projects were conducted, except Pennsylvania, were used chiefly for field supervision and checking, crew foremen, transportation and equipment. The town expenditures in Maine, Vermont and Massachusetts were for transportation and wages of town labor used to supplement the W.P.A. crews. Such town cooperation in furnishing crew transportation, especially in Vermont and Massachusetts, aided the control program materially, as some of the local projects could not have been operated otherwise because of insufficient W.P.A. funds for such travel expenses.



**Table 55**      State and Local Cooperative Funds Spent in Conjunction  
With W.P.A. Program in Northeastern States During 1941

State	State Funds	County Funds		Town Funds		Indiv. Funds		Total
		No. County Contributions	Amount	No. Town Contributions	Amount	No. Indiv.	Amount	
Maine	2,331.77	-	-	7	1,219.79	1	12.80	3,564.36
N. H.	98.56	-	-	-	-	-	-	98.56
Vt.	34.15	-	-	9	2,066.27	-	-	2,100.42
Mass.	1,920.91	-	-	5	548.58	29	29.20	2,498.69
N. I.	13.41	-	-	-	-	-	-	13.41
N. Y.	17,420.11	2	258.40	-	-	3	164.80	17,843.31
Conn.	-	-	-	-	-	-	-	-
Totals	21,818.91	2	258.40	21	3,834.64	33	206.80	26,118.75

**Table 56 -** State and Local Cooperative Funds Spent in Conjunction  
With W.P.A. Program in Northeastern States, 1935-1941, Inclusive

State	State Funds	County Funds		Town Funds		Indiv. Funds		Total
		No. County Contributions	Amount	No. Town Contributions	Amount	No. Indiv.	Amount	
Maine	17,199.71	-	-	81	12,043.59	4	57.20	29,300.50
N. H.	2,754.24	6	1,724.03	20	1,591.44	-	-	6,069.76
Vt.	521.65	-	-	69	22,165.68	-	-	22,687.33
Mass.	12,504.28	-	-	39	17,652.66	717	2,278.86	32,435.80
N. I.	1,128.39	-	-	-	-	-	-	1,128.39
Conn.	1,719.21	-	-	2	851.00	1	8.00	2,578.21
N. Y.	165,129.30	4	594.40	-	-	6	422.40	166,146.10
N. J.	941.86	-	-	-	-	-	-	941.86
Pa.	556.70	-	-	-	-	5	307.50	644.20
Totals	202,235.54	10	2,318.43	201	54,304.37	733	3073.96	261,932.15



State	Laine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Penn.	Total
Original allotment	255,262.00	250,587.00	151,283.00	157,669.00	20,212.00	51,127.00	421,304.00	2958.00	200,749.00	1,311,541.00
Recession-6/10/36	31,500.00	35,000.00	22,500.00	20,000.00	3,000.00	6,000.00	56,500.00	-	32,000.00	208,500.00
Increase-7/3/36	24,000.00	18,500.00	13,000.00	15,000.00	2,000.00	3,500.00	37,000.00	1000.00	18,000.00	139,000.00
Recession-10/20/37	199.51	199.56	98.28	400.00	54.48	100.68	174.31	64.51	75.59	1,111.34
Recession-9/15/38	-	-	-	.03	-	.05	.55	-	-	1.13
Increase-6/23/39	-	-	4.95	-	-	-	-	-	30.84	35.79
Total Funds-001088	249,562.49	235,887.44	141,689.67	150,268.97	19,157.52	48,526.27	402,129.34	3893.49	186,704.25	1,413,541.34

Appropriation 201085

Original allotment	53,500.00	34,100.00	16,200.00	23,500.00	4,500.00	2,500.00	91,700.00	800.00	24,500.00	24,500.00
Increase-2/24/36	-	25,500.00	10,000.00	-	-	-	25,000.00	-	7,500.00	7,500.00
Recession-8/24/38	5,300.00	-	-	-	-	1,000.00	-	-	-	1,000.00
Increase-9/15/36	46,500.00	52,600.00	33,200.00	30,000.00	2,900.00	7,000.00	68,000.00	600.00	37,000.00	249,500.00
Increase-11/27/36	-	-	-	5,000.00	1,000.00	1,000.00	10,000.00	-	1,000.00	18,000.00
Recession-11/27/36	-	14,000.00	3,000.00	-	-	-	-	-	-	17,000.00
Recession-12/31/38	-	-	3,340.00	-	-	-	4,000.00	-	-	7,340.00
Increase-1/4/37	-	-	-	-	-	310.00	-	-	-	310.00
Increase-1/15/37	-	-	3,000.00	-	-	-	-	-	-	3,000.00
Recession-1/15/37	-	-	-	-	-	-	-	-	-	-
Increase-2/13/37	8,100.00	5,600.00	4,400.00	2,100.00	-	900.00	16,920.00	-	3,000.00	30,520.00
Increase-3/1/37	9,510.00	9,400.00	7,750.00	11,720.00	450.00	1,850.00	17,750.00	140.00	4,000.00	61,720.00
Increase-3/12/37	10,000.00	10,000.00	6,240.00	5,530.00	150.00	1,250.00	14,880.00	140.00	5,450.00	50,000.00
Recession-10/12/37	3,000.00	2,200.00	2,800.00	4,100.00	60.00	325.00	3,500.00	75.00	3,500.00	13,200.00
Recession-1/24/38	31.00	153.00	225.00	437.00	-	113.00	468.00	-	273.00	1,317.00
Recession-4/30/39	51.70	50.64	62.97	53.88	7.39	51.22	60.67	11.32	86.59	311.37
Total Funds-201085	122,754.21	120,610.32	71,344.03	73,502.12	9,122.61	11,715.78	237,301.33	1593.68	79,020.41	644,287.36

Appropriation 501092

Original allotment	39,720.00	41,410.00	28,610.00	39,450.00	1,550.00	4,150.00	76,120.00	1580.00	29,740.00	29,740.00
Increase-10/1/37	-	-	-	-	-	-	-	260.00	-	260.00
Recession-10/1/37	-	-	-	260.00	-	-	-	-	-	260.00
Recession-11/20/37	-	-	-	1,000.00	-	-	-	-	-	1,000.00
Increase-11/20/37	-	-	-	-	-	-	1,000.00	-	-	1,000.00
Recession-12/5/37	-	-	1,000.00	-	-	-	-	-	-	1,000.00
Recession-12/5/37	-	-	-	-	-	-	-	-	1,000.00	1,000.00
Recession-12/17/37	-	200.00	-	100.00	-	-	200.00	-	-	500.00
Increase-12/17/37	-	-	1,900.00	-	-	-	-	-	-	1,900.00
Recession-1/1/38	34,953.00	27,801.00	17,475.00	24,440.00	1,098.00	5,140.00	56,736.00	1080.00	13,124.00	157,736.00
Recession-5/19/38	-	-	-	-	-	-	-	1000.00	-	1,000.00
Increase-5/28/38	-	-	-	500.00	580.00	-	-	-	-	1,080.00
Total Funds-501092	34,953.00	27,801.00	17,475.00	24,940.00	1,648.00	10,280.00	56,936.00	2080.00	14,124.00	157,736.00



N.P.h. Project Funds Allotted For Blister Rust Control in Northeastern States, 1935-1941, Inclusive. (Continued)

Appropriation 701082

State	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Penna.	Totals
Original allotment	10,308.00	9,493.00	6,010.00	11,246.00	938.00	1,383.00	16,838.00	-	7,310.00	63,516.00
Increase 8/16/38	41,250.00	12,400.00	27,398.00	45,308.00	1,856.00	7,358.00	75,385.00	-	29,963.00	270,918.00
Increase 3/14/39	28,207.00	29,200.00	18,271.00	35,181.00	2,412.00	5,452.00	52,554.00	-	22,323.00	194,600.00
Reclassification-5/21/40	1,000.00	2,200.00	1,250.00	1,250.00	86.95	300.00	2,700.00	-	100.00	8,886.95
Reclassification-2/19/41	95.45	168.22	94.53	118.65	-	67.32	190.83	-	35.07	770.07
Total Funds-701082	70,669.55	78,724.78	51,334.47	90,366.35	5,109.05	13,835.63	141,886.17	-	59,460.93	519,376.98

Appropriation 201087

Original allotment	20,490.00	21,020.00	13,490.00	11,000.00	1,500.00	-	20,000.00	-	14,270.00	101,770.00
Reclassification-7/29/39	8,000.00	6,000.00	4,000.00	-	-	-	-	-	6,000.00	24,000.00
Increase-8/16/39	18,353.00	17,498.00	8,570.00	13,571.00	2,200.00	-	51,261.00	-	9,498.00	100,951.00
Increase-10/11/39	5,000.00	3,666.00	3,200.00	4,256.00	-	-	7,734.00	-	3,166.00	27,022.00
Increase-11/8/39	-	-	1,600.00	1,424.00	-	-	1,000.00	-	2,000.00	6,024.00
Increase-11/24/39	1,000.00	2,000.00	1,000.00	1,530.00	-	-	3,500.00	-	1,000.00	10,020.00
Reclassification-11/28/39	-	100.00	-	-	1,000.00	-	-	-	-	1,100.00
Increase-12/6/39	-	-	3,000.00	-	-	-	3,200.00	-	-	6,200.00
Increase-1/3/40	3,000.00	5,000.00	2,000.00	5,000.00	-	-	3,800.00	-	2,000.00	18,800.00
Increase-1/24/40	2,000.00	2,000.00	2,000.00	2,000.00	-	-	3,000.00	-	2,000.00	13,000.00
Increase-2/19/40	1,500.00	1,500.00	1,500.00	1,500.00	-	-	1,500.00	-	1,500.00	9,000.00
Increase-3/14/40	2,000.00	2,000.00	2,000.00	2,000.00	-	-	4,000.00	-	2,000.00	14,000.00
Increase-3/18/40	700.00	650.00	-	-	-	-	900.00	-	-	2,250.00
Increase-4/23/40	2,025.00	2,000.00	-	-	-	-	2,725.00	-	-	6,750.00
Increase-5/23/40	9,000.00	10,000.00	6,840.00	9,000.00	-	-	22,962.00	-	6,000.00	63,802.00
Increase-5/10/40	-	-	2,000.00	-	-	-	4,000.00	-	-	6,000.00
Increase-6/8/40	3,657.00	4,716.00	-	3,638.00	-	-	10,045.00	-	2,366.00	25,020.00
Increase-6/2/17/41	3,042.83	3,828.00	2,101.99	2,522.59	279.45	-	11,431.30	-	1,412.44	24,616.70
Total Funds-201087	57,682.07	62,522.00	41,098.01	50,386.41	4,420.55	-	108,195.70	-	38,987.56	363,090.20



W.P.A. Project Funds Allotted For Blister Rust Control in Northeastern States, 1935-1941, Inclusive. (Continued)

Appropriation 401087

State	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Penna.	Totals
Original Allotment	12,024.00	17,000.00	11,000.00	15,000.00	1,144.00	-	24,542.00	-	3,525.00	90,035.00
Increase-8/28/40	8,000.00	4,000.00	2,000.00	2,000.00	1,000.00	-	16,000.00	-	2,000.00	35,000.00
Increase-9/13/40	15,648.00	10,717.00	5,659.00	6,489.00	976.00	-	15,096.00	-	4,715.00	61,000.00
Increase-9/23/40	584.00	891.00	719.00	733.00	-	-	1,596.00	-	705.00	5,328.00
Increase-12/19/40	2,338.00	4,064.00	3,374.00	3,426.00	-	-	6,889.00	-	3,518.00	27,509.00
Increase-3/10/41	4,176.00	6,628.00	5,248.00	5,552.00	2,080.00	-	12,277.00	-	5,137.00	40,000.00
Increase-4/25/41	5,200.00	6,420.00	2,855.00	-	-	-	10,000.00	-	3,415.00	27,890.00
Increase-5/5/41	-	-	-	9,955.00	-	-	-	-	-	9,955.00
Increase-5/12/41	5,330.00	6,425.00	2,835.00	-	-	-	9,865.00	-	3,265.00	27,715.00
Total Funds-401087	53,200.00	56,145.00	37,670.00	42,965.00	5,200.00	-	95,855.00	-	52,080.00	319,710.00

Appropriation 801085

Original allotment	20,500.00	32,000.00	12,000.00	24,500.00	2,700.00	-	53,000.00	-	18,300.00	130,000.00
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Reconciliation

Appropriation	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Penna.	Totals
001085	249,500.00	230,007.44	111,000.00	150,208.87	18,107.63	48,826.27	402,129.37	3855.22	166,704.25	1,155,433.75
201085	122,753.31	120,316.52	71,344.00	73,308.12	9,102.61	11,715.76	237,301.57	1695.89	79,030.01	729,121.19
501085	54,605.16	65,321.01	13,708.83	62,453.05	1,102.18	9,937.59	121,850.67	1216.20	14,551.84	279,536.43
701085	76,639.85	78,724.79	67,891.47	90,788.35	5,109.05	15,525.62	141,850.17	-	50,430.05	571,470.48
201087	57,552.07	52,322.00	41,098.01	50,589.41	4,420.55	-	108,195.70	-	33,987.38	303,865.02
401087	55,800.00	58,145.00	32,670.00	42,955.00	5,200.00	-	95,568.00	-	32,030.00	315,378.00
201087	30,700.00	32,000.00	19,000.00	34,500.00	2,700.00	-	53,000.00	-	16,500.00	180,400.00
Totals	697,045.44	842,005.55	408,843.11	490,203.80	48,945.11	85,185.13	1,170,854.21	7805.37	450,710.23	3,978,978.94
Net Total	140.5	36.4	10.8	36.2	1.2	2.1	29.4	0.8	11.8	



Table 58 - Allotments of W.P.A. Administrative Funds For Blister Rust Control  
in Northeastern States During Fiscal Years 1938-1942, Inclusive

<u>Fiscal Year</u>	<u>Appropriation Number</u>	<u>Amount</u>	
1938.....	501008.....	\$5,840.00	
1938.....	01-96/8999.....	3,600.00	
1939.....	701089 (Original allotment).....	285.00	} ...544.56
1939.....	701089 (Increase on 7/26/38).....	285.00	
1939.....	701089 (Decrease).....	25.44	
1939.....	701009 (Original allotment).....	1,870.00	} ...6730.00
1939.....	701009 (Increase on 9/20/38).....	1,900.00	
1939.....	701009 (Increase on 3/10/39).....	250.00	
1939.....	701009 (Increase on 3/29/39).....	5,180.00	
1939.....	701009 (Decrease).....	450.00	
1940.....	201088 (Original allotment).....	2,000.00	} ...11,331.46
1940.....	201088 (Decrease on 7/28/39).....	388.00	
1940.....	201088 (Increase on 8/17/39).....	4,512.00	
1940.....	201088 (Increase on 10/11/39).....	586.00	
1940.....	201088 (Increase on 11/28/39).....	100.00	
1940.....	201088 (Increase on 12/6/39).....	250.00	
1940.....	201088 (Increase on 1/3/40).....	258.00	
1940.....	201088 (Increase on 1/24/40).....	300.00	
1940.....	201088 (Increase on 2/19/40).....	400.00	
1940.....	201088 (Increase on 3/14/40).....	600.00	
1940.....	201088 (Increase on 4/4/40).....	140.00	
1940.....	201088 (Increase on 4/4/40).....	12.00	
1940.....	201088 (Increase on 4/23/40).....	448.00	
1940.....	201088 (Increase on 5/6/40).....	657.00	
1940.....	201088 (Increase on 6/12/40).....	858.00	
1940.....	201088 (Increase on 6/12/40).....	687.00	
1940.....	201088 (Recission on 2/17/41).....	84.54	
1941.....	401008 (Original allotment).....	1,267.00	} ...7753.00
1941.....	401008 (Increase on 8/10/40).....	1,267.00	
1941.....	401008 (Increase on 8/20/40).....	180.00	
1941.....	401008 (Increase on 8/29/40).....	130.00	
1941.....	401008 (Increase on 9/14/40).....	1,615.00	
1941.....	401008 (Increase on 12/17/40).....	1,203.00	
1941.....	401008 (Increase on 3/11/41).....	848.00	
1941.....	401008 (Increase on 4/24/41).....	1,000.00	
1941.....	401008 (Increase on 5/12/41).....	485.00	
1942.....	801008 (Original allotment).....	3,424.00	} ...3449.00
1942.....	801008 (Increase on 3/30/42).....	25.00	
		\$39,248.02	



Table 59 -Total W.P.A. Expenditures During Calendar Year 1941 For The Various Blister Rust Control Projects in the Northeastern States.

State	Supervision and R.R.C. Agent Activities #	Eradication Assistants and Checkers	Ribes Eradication	Black Current Elimination	Nursery Sanitation	Blister Rust Canker Elimination	Field Data		Totals
							Mapping	General	
Maine	2,618.76	-	29,350.82	-	-	-	13,871.93	-	45,841.51
N.H.	1,320.72	200.95	20,253.88	-	-	-	13,752.23	4,200.84	39,721.67
Vt.	4,334.28	-	17,070.26	-	-	1,589.38	5,912.55	1,915.00	30,871.47
Mass.	1,710.95	-	15,808.19	-	-	1,904.59	6,330.24	1,688.40	27,442.36
R. I.	230.04	-	4,048.26	-	42.32	-	-	-	4,320.62
N. Y.	10,503.51	-	28,849.99	-	3.52	2,979.14	12,862.46	3,509.46	53,813.06
Penn.	5,225.25	134.30	19,294.41	-	10.24	-	5,830.60	-	30,425.70
Totals	26,966.51	335.25	134,775.61	-	56.08	6,473.10	59,560.01	11,313.70	237,512.61

\*Includes expenditures from Cambridge Office W.P.A. administrative funds which were charged to states as follows: New Hampshire - \$131.17; Massachusetts - \$41.08, Rhode Island - \$108.53; and Pennsylvania - \$91.50.

In addition to the expenditures listed in Table 59, W.P.A. obligations for the Cambridge, Massachusetts regional office during the calendar year 1941 were as follows:

	Wages of		Salaries of Appointees	Total Salaries and Wages		Total
	Relief Labor	Non-Relief Labor		Expenses	Expenses	
Massachusetts allotment.....	7,670.39	0	0	\$7,670.39	\$804.73	\$8,475.12
Administrative allotment.....	0	0	\$5,690.20	5,690.20	1,299.01	6,989.21
Totals.....	7,670.39	0	5,690.20	15,360.59	2,103.74	15,464.33



**Table 60** Total W.P.A. Expenditures for the Various Blister Rust Control Projects in the Northeastern States During Period 1935-1941, Inclusive (By States)

State	Superintendent and B.R.C. Agent (1)	Irradiation Assistants and Checkers	Ribes Irradiation	Black Currant Elimination	Nursery Sanitation	Blister Rust Elimination	Field Data		Total
							Mapping	General	
Ala.	55,337.16	19,914.53	441,495.59 <sup>(2)</sup>	-	70.16	-	132,505.94	2,410.31	649,733.54
Ariz.	58,410.56	20,386.35	392,409.37	-	456.86	779.37	140,573.03	19,393.42	632,416.06
Cal.	47,419.51	12,371.02	247,901.58	-	218.27	7,765.39	76,251.48	10,212.11	402,140.26
Col.	43,702.05	7,791.00 <sup>(3)</sup>	260,674.05	4,325.85	1,495.75	9,843.52	75,043.91	4,592.27	407,458.40
Conn.	2,359.60	-	41,448.45	-	407.24	-	3,443.36	-	48,258.65
Del.	7,556.40	2,363.15	55,234.80	-	171.59	-	14,653.31	3,374.74	83,153.90
Fla.	118,751.12	23,959.14 <sup>(4)</sup>	759,087.62 <sup>(5)</sup>	182.60	2,461.23	43,456.18	147,959.42	31,236.66	1,132,155.96
Ill.	816.46	991.25	5,493.66	-	-	-	-	-	7,303.37
Ind.	49,702.23	16,037.53	312,586.53	-	867.51	10,959.91	65,602.63	-	455,806.49
Iowa	183,457.14	103,883.82	2,516,351.70	4,503.45	6,150.71	77,805.25	656,013.13	71,276.57	3,618,426.71

- (1) Includes expenditures from Cambridge office W.P.A. administrative allotment as indicated in Table 65 on Page 88.
- (2) Includes \$33.03 W.P.A. funds expended under Regular Cooperative Program.
- (3) Includes \$946.45 W.P.A. funds expended under C.C.C. Program.
- (4) Includes \$300.80 W.P.A. funds expended under C.C.C. Program and \$269.78 under S.C.S. Program.
- (5) Includes \$246.76 W.P.A. funds expended under S.C.S. Program.

In addition to the expenditures listed in Table 60, W.P.A. obligations for the Cambridge, Massachusetts regional office during the period 1935-1941, inclusive, were as follows:

	Wages of Relief Labor	Wages of Non-Relief Labor	Salaries of Appointees	Total Expenses	Total
Massachusetts allotments.....	\$55,327.10	\$72.25	\$6,035.01	\$15,793.02	\$79,166.28
Administrative allotments.....	0	206.04	26,765.93	7,442.62	34,402.59
	55,327.10	278.29	31,819.94	23,145.64	115,570.27

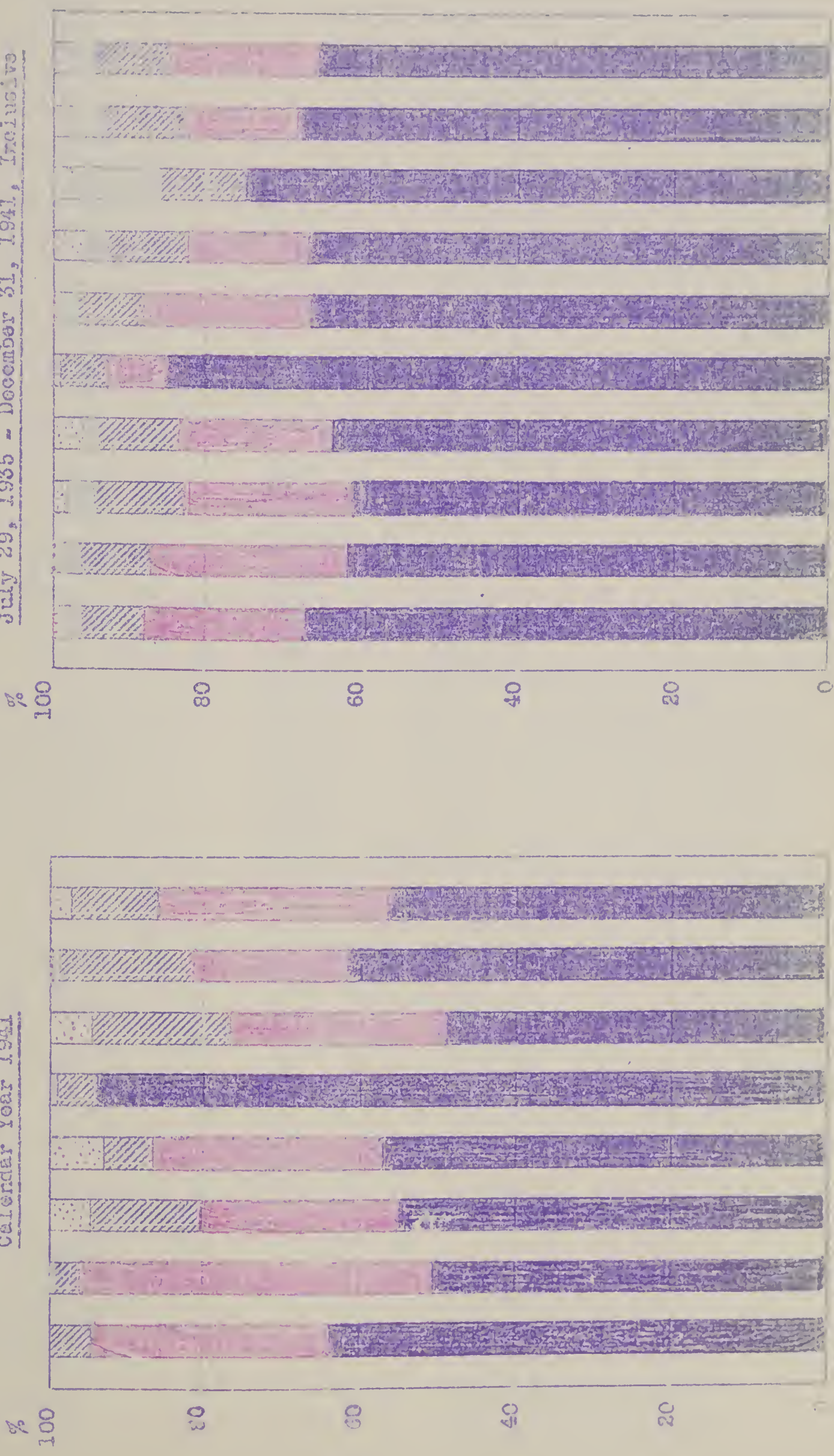


LEGEND

- Black Current Elimination - Nursery Sanitation - Blister Rust Canker Elimination
- Eradication Assistants and Checkers
- General Supervision and Blister Rust Control Agent Activities
- Field Data (Pre-eradication surveys and plot studies)
- Ribes Eradication

Calendar Year 1941

July 29, 1935 - December 31, 1941, Inclusive



U.S. GOVERNMENT PRINTING OFFICE: 1941



Table 61 = Total Expenditures, By Cooperating Agencies, Under W.P.A. Program in Northeastern States During Calendar Year 1941

State	State Funds	Towns and Counties	Indiv.	W. P. A.		B.F. and P.O.	Total
				Project Funds	Adm. Funds		
Maine	2,331.77	1,219.79	12.80	45,841.51	-	-	49,405.87
N. H.	98.56	-	-	39,597.45	131.17	155.07	39,982.25
Vt.	34.15	2,066.27	-	30,871.47	-	-	32,971.89
Mass.	1,920.91	548.58	28.20	27,401.28	41.08	-	29,941.05
R. I.	13.41	-	-	4,212.29	108.35	-	4,334.03
N. Y.	17,430.11	258.40*	184.80	53,813.08	-	-	76,656.39
Penn.	-	-	-	30,403.30	91.50	125.16	30,617.96
Totals	21,818.91	4,093.04	206.80	237,140.38	372.08	273.23	263,909.44

\* County funds - other expenditures in this column were from town funds.

Table 62 = Total Cooperative Expenditures, By Projects, Under W.P.A. Program in Northeastern States During Calendar Year 1941

State	Supervision and B.R.C. Agent Activities	Ribes eradication	Erad. Assistants and Checkers	Black Current Elimination	Nursery Sanitation	Blister Rust Elimination	Field Data		Total
							Hopping	General	
Maine	2,618.76	30,862.00	2,023.18	-	-	-	12,301.93	-	49,405.87
N. H.	1,320.72	20,392.03	200.95	-	-	-	13,867.71	4,200.84	39,832.25
Vt.	4,384.23	13,873.90	-	-	-	1,651.55	6,167.13	1,915.00	32,971.89
Mass.	1,710.95	17,364.85	621.60	-	-	2,191.85	6,363.44	1,688.40	29,941.05
R. I.	230.04	4,043.26	-	-	55.75	-	-	-	4,334.03
N. Y.	10,508.51	37,950.66	1,199.03	-	153.12	3,568.84	19,224.67	4,051.56	76,656.39
Penn.	5,225.25	10,371.53	171.30	-	10.28	-	5,230.60	-	30,617.96
Totals	25,998.51	148,863.21	4,216.06	-	226.13	7,392.20	65,355.53	11,355.80	263,909.44

In addition to the expenditures listed above, W.P.A. obligations for the Cambridge, Massachusetts regional office during the calendar year 1941 amounted to \$15,464.33. Out of this total, \$8,475.12 was derived from the Massachusetts field allotments, while \$6,989.21 was expended from W.P.A. administrative funds.



Table 63 - Total Expenditures, By Cooperating Agencies, Under W.P.A. Program in Northeastern States During Period 1935-1941, Inclusive

State	State Funds	Towns	Individuals	Counties	P.E. & P.Q.	W. P. A.		Total
						Project Funds	Adm. Funds	
Maine	17,199.71	12,043.59	57.20	-	17.60	(1) 649,002.19	693.32	679,013.61
N. H.	2,754.24	1,591.44	-	1,724.03	380.97	652,284.89	131.17	658,846.97
Vt.	521.65	22,165.63	-	-	-	401,381.95	759.51	424,827.11
Mass.	12,504.28	17,652.66	2,278.88	-	50.28	(2) 404,735.59	1,774.36	438,538.63
N. I.	1,128.59	-	-	-	-	46,030.21	169.44	49,337.24
Conn.	1,713.21	851.00	6.00	-	650.29	65,153.99	-	86,422.29
N. Y.	165,129.30	-	422.40	394.40	25.11	(3) 1,131,333.61	-	1,227,510.62
N. J.	941.86	-	-	-	-	7,395.37	-	8,247.23
Penn.	336.70	-	507.50	-	127.16	455,603.66	192.23	456,277.95
Totals	202,235.34	54,304.37	3,075.92	2,318.43	1,271.41	3,312,037.46	3,723.43	4,079,887.15

(1) In addition, \$58.03 W.P.A. funds were expended in conjunction with Regular Cooperative Program.  
 (2) In addition, \$948.45 W.P.A. funds were expended in conjunction with C.C.C. Program.  
 (3) In addition, \$300.80 W.P.A. funds were expended in conjunction with C.C.C. Program and \$525.54 with S.C.S. Program.

Table 64 - Total Cooperative Expenditures, By Projects, Under W.P.A. Program in Northeastern States During Period 1935-1941, Inclusive

State	Supervision and P.E.C. Activities	Riber Irrigation	Irrigation Assistants	Crop Elimination	Rural Sanitation	Riber Compensation	Elster Root Elimination	Field Labor		Total
								Mapping	General	
Maine	53,537.14	459,816.37	20,316.22	-	70.16	-	-	155,027.84	7,410.31	673,003.60
N. H.	53,410.50	355,249.96	22,703.05	-	493.94	-	770.37	743,714.01	19,400.09	638,844.71
Vt.	47,419.51	267,225.56	12,481.08	-	344.27	-	3,233.94	18,404.02	10,732.11	424,827.11
Mass.	23,702.05	223,009.67	7,995.81	4,921.07	1,667.15	225.60	12,327.75	73,207.17	4,716.57	435,993.62
N. I.	2,959.00	41,743.13	-	-	423.65	-	-	4,363.61	-	49,207.79
Conn.	7,356.40	55,934.35	2,976.33	-	171.50	-	-	15,810.32	4,035.49	86,422.29
N. Y.	113,761.12	259,705.97	54,292.91	427.43	3,011.92	-	50,366.23	170,410.50	40,045.01	1,227,510.62
N. J.	318.46	6,791.73	1,635.01	-	-	-	-	-	-	8,247.23
Penn.	43,702.26	315,000.40	16,124.53	-	1,101.05	-	10,959.91	65,603.67	-	456,277.95
Totals	382,437.14	2,280,656.58	147,475.72	5,351.57	7,524.55	125.30	34,137.09	690,544.88	51,400.97	4,079,887.15

In addition to the expenditures listed above, P.E.C. obligations for the Northeastern regional office during the period 1935-1941, inclusive, amount to \$113,870.37. Of this total, \$79,186.20 was derived from the Northeastern Field office, while \$34,684.17 was expended from R.I.C. administrative allotments.



Table 65 -

W. P. A. Obligations For Salaries and Wages  
Calendar Year 1941

State	Wages of Security-Wage Workers		Salaries of Appointees		Total Wages and Salaries
	Relief	Non-Relief	Project Funds	Adm. Funds	
Maine	40,433.44	480.80	-	-	40,914.24
N. H.	35,479.86	-	-	-	35,479.86
Vt.	25,697.61	-	2,032.21	-	27,729.82
Mass.	24,506.36	-	-	-	24,506.36
R. I.	4,049.62	-	-	108.33	4,157.95
N. Y.	46,867.30	427.81	5,034.89	-	52,330.00
Penna.	24,493.61	121.03	2,809.55	-	27,424.09
Totals	201,530.60	1,029.64	9,876.65	108.33	212,545.22
% of Total	94.8	0.45	4.7	0.05	100.0

July 29, 1935 to December 31, 1941

Maine	619,370.12	,746.76	48,204.14	693.32	598,014.34
N. H.	435,678.66	49,441.01	57,834.06	-	593,003.73
Vt.	321,629.81	14,842.52	37,295.69	758.31	374,432.33
Mass.	345,802.17	5,766.32	36,457.44	1,733.28	389,759.21
R. I.	42,237.39	2,427.54	2,583.23	169.44	47,417.60
Conn.	68,930.58	1,198.93	5,971.50	-	76,100.99
N. Y.	950,959.63	27,883.88	109,329.59	-	1,088,773.10
N. J.	5,441.91	-	1,542.71	-	6,984.62
Penna.	369,481.64	12,053.61	45,342.68	108.33	436,986.06
Totals	3,109,431.89	143,365.47	345,216.94	8,462.68	3,606,477.98
% of Total	86.3	4.0	9.3	0.1	100.0

In addition to the expenditures listed above, W.P.A. obligations for the Cambridge, Massachusetts regional office were as follows:

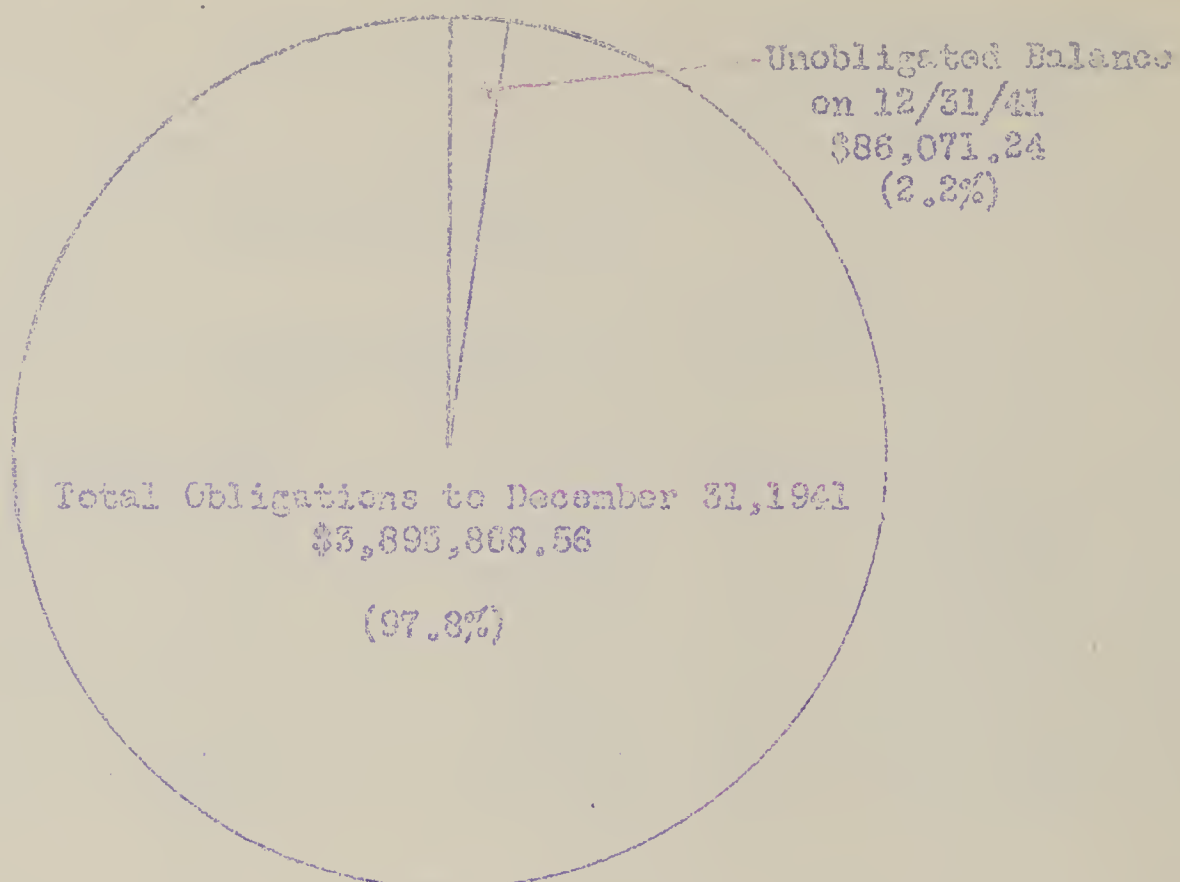
Source of Funds	Period	Wages of Security Wage Workers		Salaries of Appointees	Total
		Relief	Non-Relief		
Mass. Project Funds	(Calendar Year 1941	\$7,670.39	0	0	\$7,670.39
	(7/29/35 to 12/31/41	55,327.10	\$72.25	\$8,065.91	63,465.26
Administrative Funds	(Calendar Year 1941	0	0	5,690.20	5,690.20
	(7/29/35 to 12/31/41	0	206.04	26,753.93	26,959.97
Totals	(Calendar Year 1941	7,670.39	0	5,690.20	13,360.59
	(7/29/35 to 12/31/41	55,327.10	278.29	34,819.84	90,425.23



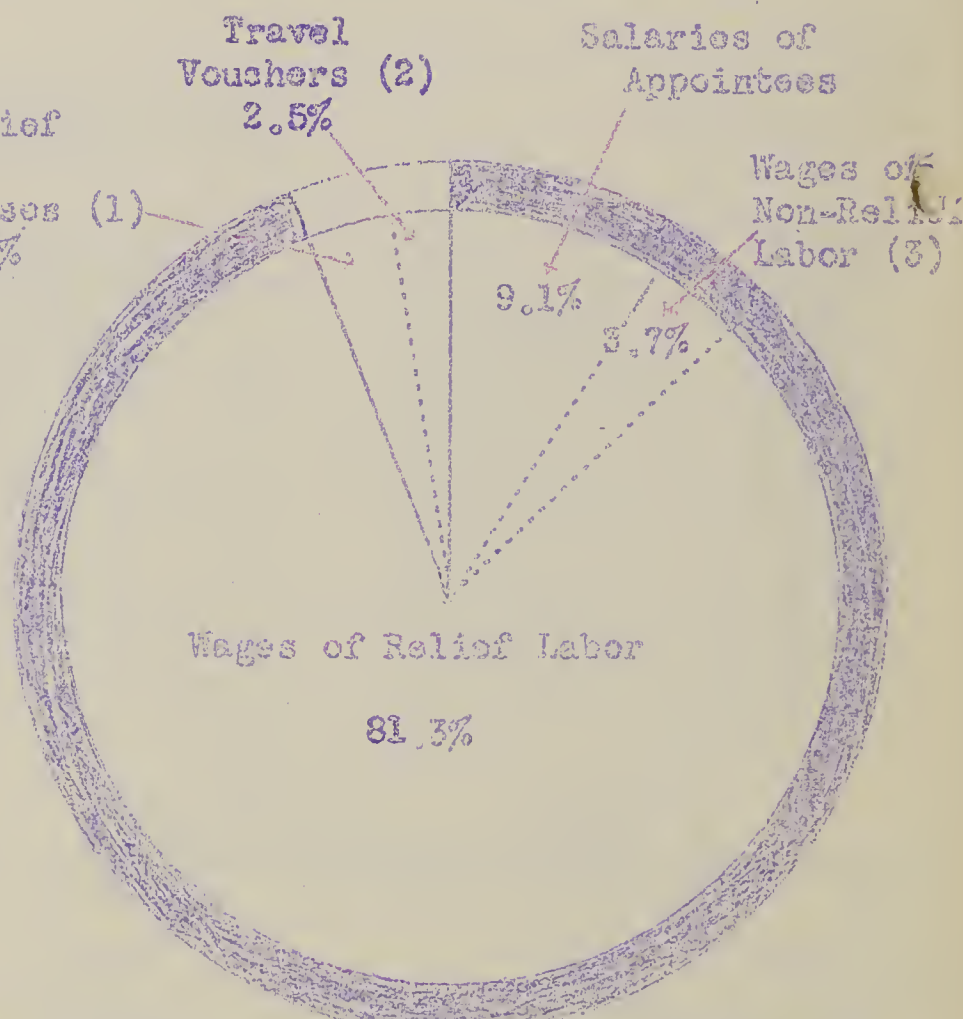
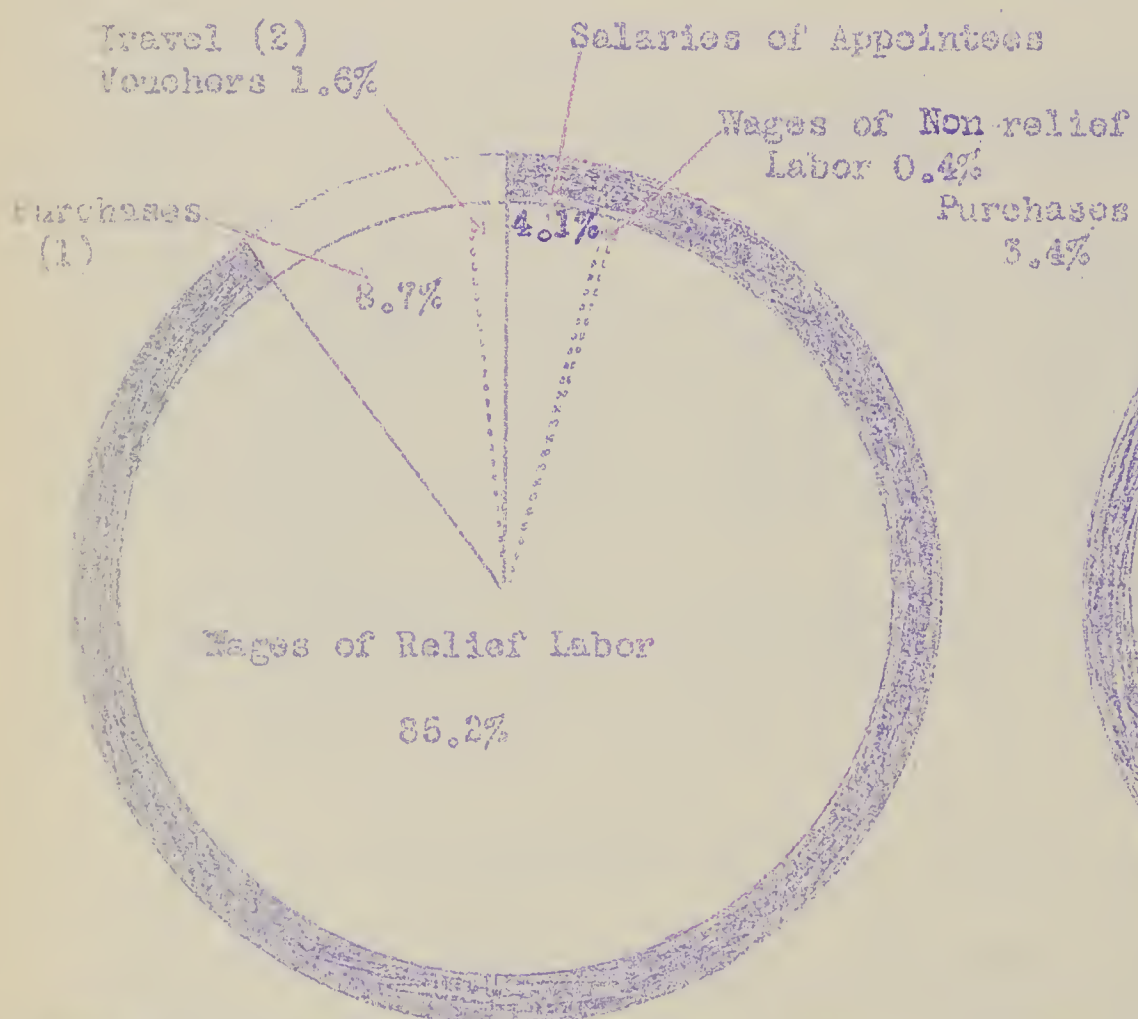
- |     |   |
|-----|---|
| (1) | Includes \$151.17 paid out of Cambridge Office W.P.A. Administrative Allowance. |
| (2) | 11 41.08 11 12 11 11 11 11 11 11  |
| (3) | 11 91.50 11 11 11 12 11 11 11 11  |



W.P.A. PROJECT FUNDS FOR DISASTER ROST CONTROL IN NORTH CAROLINA



Total W.P.A. Allotments - July 22, 1935 to December 31, 1941, Inclusive - \$3,979,939.80



Total Obligations - Calendar Year 1941  
\$245,615.50

Total Obligations - 1935 to 1941, Inclusive  
\$3,893,868.56

- (1) Supplies, materials and equipment (1034 vouchers).
  - (2) Travel, subsistence, and miscellaneous expenses (1012 vouchers) for all supervisory personnel and W.P.A. employees.
  - (3) Includes wages of non-relief laborers exempted from required ratio.
- In addition to the W.P.A. project funds, net allotments of \$39,248.02 W.P.A. administrative funds were made to the Cambridge regional office, of which \$38,129.02 was obligated up to December 31, 1941.



BLISTER RUST CONTROL ACTIVITIES UNDER STATE  
AND LOCAL W.P.A. PROGRAM

Due to the uncertainty of Federal Agency W.P.A. projects being continued after June 30, 1941, applications were submitted during the latter part of May, 1941 for Bureau sponsored blister rust control projects under the State W.P.A. Program in all of the Northeastern States except Connecticut and New Jersey. Funds were finally allotted for operating our Federal Agency projects from July to December, 1941 inclusive, and requests were sent to the respective State W.P.A. Administrators that the approved project applications for control work under the State Program be held in abeyance until the Federal Agency projects were terminated. However, in Massachusetts, the project under the State Program was operated temporarily during the period July 7-13, 1941 pending final approval of our Federal Agency project in that state. The W.P.A. workers in Massachusetts were simply transferred from one project to the other and in this manner, there was a break of only a few days in employment during the first part of July. Similar action was requested without success in some of the other states where our projects under the State W.P.A. Program had been previously approved. Beginning January 1, 1942 all W.P.A. control activities in this Region were transferred to the State Program.

During the period July 7-13, 1941 an average of 42 workers (including a few state foremen) were assigned to Ribes eradication work in 8 townships under the State W.P.A. Program in Massachusetts. A total of 15,010 wild Ribes and 5 cultivated bushes were destroyed on the 5,360 acres examined as a result of 434 man days labor. Table 67 summarizes the accomplishments on this 1941 project in detail.



Table 57 - Summary of Ribes Eradication Work Under State W.P.A. Program in Massachusetts During 1941  
(Period - July 7 to 18, 1941, Inclusive)

Type of Erad.		Initial	Re-Erad.	Total
Total	Worked	694	8,086	5,880
Acreage	Pine Protected	171	1,245	1,416
No. Ribes	Wild	806	14,704	15,010
Pulled	Cult.	-	5	5
Total Man Days		36	898	434
	Towns	-	\$15.00	\$15.00
	State	\$49.26	238.14	287.40
Cost	W.P.A. (State)	102.72	1,136.46	1,239.18
	Total	151.98	1,399.60	1,541.58
	Cost	.356	.273	.271
Per Ribes		0.5	2.9	2.6
Per Man Days		.06	.08	.06

Basis of Costs: Includes total cost of laborers and foremen employed in locating and pulling Ribes; transportation of crews and miscellaneous expenses for trail paper, picks, etc. Cost of supervisor assigned to project not included.

#### Supervision of Ribes Eradication Work Under State W.P.A. Program - 1941

The Massachusetts district leaders gave direct supervision to the Ribes eradication work under the State W.P.A. Program. In one of the districts, a state paid supervisor also assisted the district leader for 9 days, the cost of his services being \$44.24 which is not included in the Ribes eradication costs.

#### Control Activities Under State W.P.A. Program Prior to 1941

During the period 1936-1940, inclusive, a large blister rust control project was conducted under the State Program in Connecticut. A special project was also carried on in 1938 under the State W.P.A. Program in Pennsylvania where 50 laborers were employed on Ribes eradication work at the Cook State Forest during the period June 14 to September 30. A small local W.P.A. project involving Ribes eradication work was also operated in one New York district. Table 68 summarizes the total Ribes eradication accomplishments on these three state and local W.P.A. projects, as well as the 1941 activities in Massachusetts, by years and states.



Table 68 - Summary of Black Brachycephalus work under State and Federal W.P.A. Programs in Northeastern States During Period 1933-1941, by State (By Years)

State	Type of Erad.	Total Acreage		Ribes Pulled		Total Man Days	Cost				Per Acre	
		Worked	Pine tested	Wild	Cult.		Local Coop.	State	W.P.A.	Total	Cost	Acreage
36	Initial	1,939	215	1,396	37	465	346.00	32.35	1,839.98	2,217.33	1.11	0.7
	Re-Erad.	-	-	-	-	-	-	-	-	-	-	-
	Total	1,939	215	1,396	37	465	346.00	32.35	1,839.98	2,217.33	1.11	0.7
37	Initial	1,461	286	690	68	273	133.00	-	1,164.03	1,342.03	.908	0.6
	Re-Erad.	26,555	4,348	43,013	301	1871	116.25	24.05	8,750.83	8,891.28	.335	1.1
	Total	28,036	4,636	43,703	369	2149	304.25	24.05	9,955.83	10,333.56	.335	1.1
38	Initial	6,538	536	920,275	1,590	2783	233.60	-	12,323.62	12,587.22	1.91	13.7
	Re-Erad.	17,760	2,652	228,226	644	3491	1506.35	-	16,312.99	17,813.34	1.93	23.7
	Total	24,343	3,183	1,148,501	2,234	6274	1769.95	-	28,635.71	30,400.56	1.25	47.4
39	Initial	22,570	2,053	135,592	333	2031	611.23	-	9,012.84	9,624.07	.426	6.7
	Re-Erad.	16,425	5,195	82,021	321	1439	324.70	-	7,232.22	7,456.92	.405	4.1
	Total	40,995	5,853	217,613	657	3000	836.93	-	16,245.06	17,081.00	.417	8.2
40	Initial	15,532	1,230	121,976	124	353	244.11	-	3,602.32	3,902.75	.251	1.1
	Re-Erad.	22,559	3,979	150,926	35	1737	1592.06	-	6,642.24	7,124.50	.373	3.7
	Total	38,141	5,239	272,902	159	2640	1826.17	-	10,504.56	12,833.05	.323	7.2
41	Initial	594	171	306	-	36	-	49.23	102.72	151.93	.255	0.6
	Re-Erad.	5,036	1,245	14,704	5	393	15.00	233.14	1,133.46	1,339.60	.475	2.3
	Total	5,630	1,416	15,010	5	434	15.00	287.40	1,239.18	1,541.53	.271	2.3
Total	Initial	48,304	5,133	1,130,235	2,215	6476	1653.54	81.61	23,091.85	23,850.01	.411	14.2
	Re-Erad.	90,385	15,419	518,390	1,306	8,938	3144.26	232.19	40,273.99	43,930.44	.487	14.1
	Total	139,189	20,552	1,699,125	3,521	15,462	5097.80	342.30	63,368.85	73,610.45	.550	28.3

By States

ss.	Initial	594	171	306	-	36	-	49.23	102.72	151.93	.255	0.6
	Re-Erad.	5,036	1,245	14,704	5	393	15.00	233.14	1,133.43	1,339.60	.475	2.3
	Total	5,630	1,416	15,010	5	434	15.00	287.40	1,239.18	1,541.53	.271	2.3
m.	Initial	45,895	4,962	264,698	2,215	4,447	1653.54	32.35	19,358.14	21,544.03	.489	6.7
	Re-Erad.	84,535	14,034	422,070	1,301	8,173	3349.01	24.05	37,542.63	40,519.59	.484	7.1
	Total	130,430	19,046	686,768	3,516	12,620	5002.55	56.40	57,400.77	62,063.62	.477	13.8
Y.	All Re.	135	90	12,915	-	104	50.25	-	324.90	405.15	2.02	10.0
	Initial	2,315	-	915,233	-	1,993	-	-	8,134.00	8,134.00	2.01	10.0
	Re-Erad.	629	-	69,201	-	511	-	-	1,265.00	1,265.00	2.01	10.0
Total	Initial	2,944	-	984,434	-	2,504	-	-	9,400.00	9,400.00	3.17	10.0
	Re-Erad.	90,385	15,419	518,390	1,306	8,938	3144.26	232.19	40,273.99	43,930.44	.487	14.1
	Total	139,189	20,552	1,699,125	3,521	15,462	5097.80	342.30	63,368.85	73,610.45	.550	28.3

Basis of Costs: Same as shown for Table 67.



# Nursery Sanitation - State W.P.A. Program

No nursery sanitation work was performed under the State W.P.A. Program in this Region during 1941.

Table 69 summarizes the results of all nursery sanitation activities under the State W.P.A. Program up to 1941, inclusive, such work being confined to Connecticut during 1937 and 1940.

Table 69 - Summary of Nursery Sanitation Work Under State W.P.A. Program in Northeastern States During Period 1936-1941, Inclusive (All Re-Eradication Work in Connecticut During 1937 and 1940)

Acreage Worked	No. Ribes Pulled (All Wild)	Total Man Days	Cost			Per Acre		
			Town	W.P.A.	Total	Cost	Ribes	Man Days
2,397	348	256	25.16	1245.18	1270.35	.423	0.1	.09

# Pine and Control Area Mapping - State W.P.A. Program

No pre-eradication survey work was performed under the State W.P.A. Program in the Northeastern States during 1941.

Mapping accomplishments for all years under this program (work restricted to Connecticut from 1936 to 1940, inclusive) are summarized in Table 70.

Table 70 - Summary of Pine and Control Area Mapping Under State W.P.A. Program in Connecticut During Period 1936 to 1941, Inclusive

Year	Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost			
					Towns	State	W.P.A.	Total
1936	26,703	-	-	580	40.70	31.38	2,351.57	2,923.95
1937	22,040	114,900	204 1/2	4,636	-	-	28,768.16	28,768.16
1938	20,634	-	1,128	4,299	912.20	30.75	22,687.90	23,631.15
1939	63,376	-	276 1/2	2,492	1382.42	603.35	13,023.90	15,620.67
1940	86,782	-	1,509	5,020	3020.17	-	17,935.46	20,955.65
Totals	843,533	114,900	2,918 1/2	17,027	5355.79	670.78	32,172.99	38,199.56

Basis of costs: Includes actual cost of personnel assigned to mapping project, transportation, and expenses for mapping equipment. Cost of supervisors excluded.



Table 71 - Total Cooperative Expenditures, By Cooperating Agencies, Under State and Local W. P. A. Programs in Northeastern States

State	Year	Individuals	Towns	State	W.P.A.	Totals
Mass.	1941	-	15.00	331.04	1,239.18*	1,586.63
	All Years	-	15.00	331.04	1,239.18	1,585.02
Conn.	1941	-	-	-	-	-
	All Years	843.88	11,741.91	2,972.43	232,690.81	243,249.03
N. Y.	1941	-	-	-	-	-
	All Years	80.25	-	2.40	324.90	407.55
Penna.	1941	-	-	-	-	-
	All Years	-	-	503.75	9,400.00	9,903.75
Totals	1941	-	15.00	331.04	1,239.18	1,585.22
	All Years	924.13	11,756.91	3,817.23	245,624.82	260,151.19

\*In addition, \$292.99 was expended for the wages of W.P.A. clerks employed at the Cambridge Regional Office during period July 1-18, 1941.

Table 72 - Total Cooperative Expenditures, By Projects, Under State and Local W.P.A. Programs in Northeastern States

State	Year	Ribes Eradication	Eradication Assistants and Checkers	Nursery Sanitation	Mapping		Field Studies	Totals
					Pine and Control Area	Blown Down Timber		
Mass.	1941	1,541.58	44.24	-	-	-	-	1,585.82
	All Years	1,541.58	44.24	-	-	-	-	1,585.82
Conn.	1941	-	-	-	-	-	-	-
	All Years	62,463.72	23,224.63	1,270.23	33,199.56	7,553.43	60,537.33	248,248.87
N. Y.	1941	-	-	-	-	-	-	-
	All Years	405.15	2.40	-	-	-	-	407.55
Penna.	1941	-	-	-	-	-	-	-
	All Years	9,400.00	503.75	-	-	-	-	9,903.75
Totals	1941	1,541.58	44.24	-	-	-	-	1,585.82
	All Years	73,810.45	23,769.02	1,270.23	36,199.56	7,553.43	60,537.33	250,150.22



BLISTER RUST CONTROL ACTIVITIES UNDER S.C.S. PROGRAM  
IN NORTHEASTERN STATES

Control work under the S.C.S. Program in the Northeastern States during 1941 was restricted to New York where a few S. C. S. and state employees re-worked the environs of two state nurseries which have been leased by the Soil Conservation Service. The results of this work are summarized on Page 99.

During the period 1936 to 1940, control work was conducted under the S.C.S. Program in Rhode Island, New York, New Jersey, and Pennsylvania. The accomplishments and expenditures for all years, by states and projects, are shown on the following three pages.



Table 73 - Summary of Ribes Eradication Work Conducted Under S.C.S.  
Program in Northeastern States During Period 1936-1941, Inclusive

By Years

(No work performed during 1941)

Year	Type of Erad.	Total Acreage		Ribes Pulled		Total Man Days	Cost			Per Acre			
		Worked	Protected	Wild	Cult.		State	W.P.A.	S.C.S.	Total	Cost	Ribes	Man Days
1936	Initial	4,112	143	67,793	155	1,632	-	-	2,522.65	2,529.65	.615	16.5	.60
	Re-Erad	214	26	2,190	-	410	-	-	635.73	635.73	2.97	10.2	1.22
	Total	4,326	169	69,983	155	2,042	-	-	3,165.38	3,165.38	.732	16.2	.67
1937	Initial	2,921	1,206	149,524	45	1,974	603.04	245.76	2,970.52	3,819.52	1.31	51.1	.80
	Initial	5,170	1,353	241,357	16	3,828	1,156.00	-	5,670.41	6,826.41	1.32	46.6	.74
	Re-Erad	400	65	10,457	-	191	84.80	-	374.25	359.05	1.41	41.0	.75
1938	Total	5,463	1,433	251,914	16	4,019	1,240.80	-	5,944.66	7,125.46	1.32	46.6	.74
	Initial	4,740	318	192,193	144	1,990	-	-	4,205.70	4,505.70	.908	40.5	.74
	Re-Erad	337	60	4,013	-	90	-	-	200.06	200.06	.524	11.9	.85
1939	Total	5,077	378	196,206	144	2,080	-	-	4,505.76	4,505.76	.887	38.6	.71
	Initial	5,500	112	777	-	520	3.12	-	1,123.14	1,123.32	.323	0.2	.18
	Re-Erad	9,514	4,645	2,170	-	1,794	10.83	-	3,880.41	5,891.29	.418	0.2	.19
Totals	Total	12,514	4,757	2,947	-	2,314	14.03	-	5,008.55	5,022.61	.392	0.2	.14
	Initial	20,451	3,132	651,444	360	9,944	1,762.22	245.76	16,604.42	18,612.40	.910	51.2	.43
	Re-Erad	10,120	4,816	18,850	-	2,485	95.68	-	4,950.45	5,066.13	.593	1.9	.23
	Total	30,571	7,948	670,294	360	12,429	1,857.90	245.76	21,554.87	23,698.53	.775	21.9	.41

By States

H. I.	Initial	5,500	112	777	-	520	3.12	-	1,123.14	1,123.14	.323	0.2	.18
	Re-Erad	9,514	4,645	2,170	-	1,794	10.83	-	3,880.41	5,891.29	.418	0.2	.19
	Total	12,514	4,757	2,947	-	2,314	14.03	-	5,008.55	5,022.61	.392	0.2	.14
S. T.	Initial	9,485	2,690	369,580	205	5,015	1,759.04	245.76	9,102.04	10,172.84	1.21	43.7	.60
	Re-Erad	592	145	14,470	-	231	81.00	-	474.51	559.11	.944	24.4	.37
	Total	9,017	2,835	383,850	205	5,294	1,843.04	245.76	9,576.55	10,731.95	1.19	42.6	.57
Penn.	Initial	6,526	350	281,237	155	4,411	-	-	7,358.24	7,358.24	.857	33.0	.55
	Re-Erad	214	26	2,190	-	410	-	-	635.73	635.73	2.97	10.2	1.22
	Total	6,740	353	283,427	155	4,821	-	-	7,993.97	7,993.97	.809	33.4	.57
Totals	Initial	20,451	3,132	651,444	360	9,944	1,762.22	245.76	16,604.42	18,612.40	.910	51.2	.43
	Re-Erad	10,120	4,816	18,850	-	2,485	95.68	-	4,950.45	5,066.13	.508	1.9	.23
	Total	30,571	7,948	670,294	360	12,429	1,857.90	245.76	21,554.87	23,698.53	.775	21.9	.41



# Nursery Sanitation - S.C.S. Program

A few S.C.S. and State employees spent 59 man days during 1941 eradicating Ribes from the environs of two New York State nurseries which have been leased by the Soil Conservation Service. The results of this 1941 sanitation work were as follows:

Nursery	Type of Erad.	Acreage Worked	No. Ribes Pulled		Total Man Days	Cost		
			Wild	Cult.		State	S.C.S.	Total
Big Flats	Initial	625	4,907	21	42	\$77.80	\$95.40	\$173.20
Painted Post	Re-Erad.	565	16	-	17	24.86	43.20	68.06
Total	-	1,190	4,923	21	59	102.66	138.60	241.26

Table 74 - Summary of Nursery Sanitation Work Conducted Under S.C.S. Program in Northeastern States During Period 1936-1941, Inclusive

## By Years

Year	Type of Erad.	Acreage Worked	Ribes Pulled		Total Man Days	Cost				Per Acre		
			Wild	Cult.		State	N.E. & D.C.	S.C.S.	Total	Cost	Ribes	Man Days
1936	Initial	195	1,538	65	102	77.25	-	228.00	305.25	1.57	7.9	.52
1937	Re-Erad.	250	146	-	81	42.00	29.54	2.25	73.79	.295	0.6	.03
1938	Initial	215	0	3	19	29.00	-	55.30	84.30	.392	0	.08
	Re-Erad.	5,538	299	-	25	62.40	-	46.15	110.55	.020	0.05	.007
	Total	5,753	299	3	44	91.40	-	103.45	194.85	.034	0.05	.01
1939	Re-Erad.	5,600	72	1	21	62.40	-	32.40	94.80	.017	0.01	.003
1941	Initial	625	4,907	21	42	77.80	-	95.40	173.20	.277	7.9	.07
	Re-Erad.	565	16	-	17	24.86	-	43.20	68.06	.120	0.03	.03
	Total	1,190	4,923	21	59	102.66	-	138.60	241.26	.203	4.2	.05
Totals	Initial	1,035	6,445	89	163	184.05	-	378.70	562.75	.544	6.2	.16
	Re-Erad.	11,953	533	1	714	191.66	29.54	126.00	347.26	.029	0.04	.005
	Total	12,988	6,978	90	2344	375.71	29.54	504.70	909.95	.070	0.5	.02

## By States

N. Y.	Initial	625	4,907	21	42	77.80	-	95.40	173.20	.277	7.9	.07
	Re-Erad.	11,703	387	1	63	149.66	-	123.75	273.41	.023	0.03	.005
	Total	12,328	5,294	22	105	227.46	-	219.15	446.61	.036	0.4	.008
P. S.	Initial	195	1,538	65	102	77.25	-	228.00	305.25	1.57	7.9	.52
	Re-Erad.	250	146	-	81	42.00	29.54	2.25	73.79	.295	0.6	.03
	Total	445	1,684	65	183	119.25	29.54	230.25	379.04	.852	3.8	.25
Penn.	Initial	215	0	3	19	29.00	-	55.30	84.30	.392	-	.08
	Initial	1,035	6,445	89	163	184.05	-	378.70	562.75	.544	6.2	.16
	Re-Erad.	11,953	533	1	714	191.66	29.54	126.00	347.26	.029	0.04	.005
Total	Total	12,988	6,978	90	2344	375.71	29.54	504.70	909.95	.070	0.5	.02

Basis of Costs: Same as shown for Table 26 on Page 41.



Table 75 - Total Expenditures, By Cooperating Agencies, Under S.C.S. Program in Northeastern States 1936-1941, Inclusive

State	Year	State Funds	B.E. & P.Q.	W.P.A.	S.C.S.	Totals
R. I.	1941	-	-	-	-	-
	1936-1941	14.06	-	-	5,797.19	5,811.25
N. Y.	1941	102.66	-	-	138.60	241.26
	1936-1941	4,476.87	-	515.54	9,050.87	14,043.28
N. J.	1941	-	-	-	-	-
	1936-1941	119.25	29.54	-	230.25	379.04
Penna.	1941	-	-	-	-	-
	1936-1941	178.60	-	-	9,613.27	9,791.87
Totals	1941	102.66	-	-	138.60	241.26
	1936-1941	4,788.78	29.54	515.54	24,691.58	30,025.44

Table 76 - Total Cooperative Expenditures, By Projects, Under S.C.S. Program in Northeastern States, 1936-1941, Inclusive

State	Year	Ribes Eradication	Eradication Assistants and Checkers	Nursery Sanitation	Field Data (General)	Total
R. I.	1941	-	-	-	-	-
	1936-1941	5,022.61	786.59	-	2.25	5,811.25
N. Y.	1941	-	-	241.26	-	241.26
	1936-1941	10,731.95	2,864.72	446.61	-	14,043.28
N. J.	1941	-	-	-	-	-
	1936-1941	-	-	379.04	-	379.04
Penna.	1941	-	-	-	-	-
	1936-1941	7,943.97	1,763.60	84.50	-	9,791.87
Totals	1941	-	-	241.26	-	241.26
	1936-1941	23,698.53	5,414.71	809.85	2.25	30,025.44



BLISTER RUST CONTROL ACTIVITIES IN COOPERATION WITH  
NATIONAL YOUTH ADMINISTRATION IN NORTHEASTERN STATES

An attempt was made by District Leader Holcomb during 1941 to utilize the services of N.Y.A. boys on Ribes eradication work in two townships in Franklin County, N.Y. However, the project was not entirely successful and operated only for a short period. The desired number of boys were not available and due to the limited number of hours they were allowed to work it was very difficult to arrange a schedule involving the services of a full time state foreman.

Table 77 - Summary of Ribes Eradication Work Under N.Y.A. Program  
In New York During 1941

Type of Erad.	Acreage Worked	No. Ribes Pulled (all Wild)	Total Man Days	Cost			Per Acre		
				State	N.Y.A.	Total	Cost	Ribes	Man Days
Initial	25	38	1	2.20	-	2.20	.088	1.5	.04
Re-Erad	555	4,741	31	63.80	34.00	97.80	.176	8.5	.06
Total	580	4,779	32	66.00	34.00	100.00	.172	8.2	.05

Basis of Costs: Includes wages of laborers and foreman while engaged in locating and pulling Ribes.

Supervision of 1941 Ribes Eradication Work Under N.Y.A. Program

A state checker spent  $3\frac{1}{2}$  man days inspecting the N.Y.A. Ribes eradication work in New York during 1941. The cost of this state employee's time (\$18.20) is charged to the project "Eradication Assistants and Checkers" in this report.

Table 78 - Summary of Ribes Eradication Work Under N.Y.A. Program  
in Northeastern States During Period 1936-1941, Inclusive

State	Type of Erad.	Acreage Worked	No. Ribes Pulled (all Wild)	Total Man Days	Cost			Per Acre		
					State	N.Y.A.	Total	Cost	Ribes	Man Days
N.Y.	Initial	25	38	1	2.20	-	2.20	.088	1.5	.04
	Re-Erad	555	4,741	31	63.80	34.00	97.80	.176	8.5	.06
	Total	580	4,779	32	66.00	34.00	100.00	.172	8.2	.05
Maine	Initial	348	4,242	84	100.00	220.80	320.80	.922	12.2	.24
	Initial	373	4,280	85	102.20	220.80	323.00	.866	11.5	.23
Totals	Re-Erad.	555	4,741	31	63.80	34.00	97.80	.176	8.5	.06
	Total	928	9,021	116	136.00	254.80	390.80	.453	9.7	.13



WILDER RIBES CONTROL WORK IN COOPERSTOWN DISTRICT  
NATIONAL VOLUNTEER SERVICE IN NORTHEASTERN STATES

Through the efforts of our District Leader Charlton, arrangements were made with the National Volunteer Service to have from 3 to 9 men from the "Conscientious Objectors" camp located at Cooperstown, N. Y. assigned to Ribes eradication work in four townships during the period July 2 to September 24, 1941 under the direction of a state foreman.

Table 79 - Summary of Ribes Eradication Work Under N.V.S. Program  
in New York During 1941

Type of Erad.	Acreage Worked	No. Ribes Pulled		Total Man Days	Cost			Per Acre		
		Wild	Cult.		State	N.V.S.	Total	Cost	Ribes	Man Days
Initial	1,416	19,608	65	241	334.50	546.40	881.20	.622	13.8	.47
Re-Erad.	286	1,220	54	36	56.50	78.00	135.00	.472	4.8	.12
Total	1,702	20,828	119	277	391.40	624.40	1,016.20	.597	12.2	.16

Basis of Costs: Includes wages of laborers and foreman while engaged in locating and pulling Ribes.

A state checker also spent 4 days inspecting the work performed by the N.V.S. personnel. The cost of his time (\$20.30) is charged to the project "Eradication Assistants and Checkers" in this report.

Special Pine Infection Studies

Three men from the Cooperstown camp and one state employee also spent 42 man days on pine infection studies made in Charlton's district during the latter part of November and a portion of December, 1941. The cost of this investigational work was \$149.10, of which \$40.30 was paid by the state and \$108.80 by the National Volunteer Service.







BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS

UNDER ALL PROGRAMS IN THE NORTHEASTERN STATES

DURING 1941







Table 80 - Personnel Employed on Blister Rust Control Work  
in Northeastern States During 1941

State			Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	Penna.	Totals
State Leaders			1	1	1	1	1	1	1	1	8
District Leaders			4	5	3	4	-	1 <sup>(1)</sup>	8	3	28
Supervisors, Technical Foremen, and Checkers	Regular		-	3	-	-	-	-	18 <sup>(5)</sup>	-	21
	C.C.C.		1	-	1	-	2	4 <sup>(4)</sup>	35	28	71
	W.P.A. (F.A.)		4 <sup>(2)</sup>	1 <sup>(3)</sup>	-	1	-	-	-	1	7
	Total		5	4	1	1	2	4	53	29	99
Foremen, Scouts, Laborers, and Clerks	Regular		105	247	25	11	-	23	173	-	594
	C.C.C.		17	-	21	7	30	60	215	556	906
	W.P.A.	W.P.A.	115	98	84	77 <sup>(6)</sup>	16	-	93	106	594
	(F.A.)	Others	18	-	-	-	-	-	23	-	41
	S.C.S.		-	-	-	-	-	-	6	-	6
	N. Y.A.		-	-	-	-	-	-	5	-	5
	N.V.S.		-	-	-	-	-	-	7	-	7
	Total		255	345	130	95	46	83	532	662	2,148
Total			265	355	136	101	49	89	594	695	2,283

- (1) State agent who assisted state leader on supervisory work.
- (2) Three of these employees also supervised control work under Regular Cooperative Program.
- (3) W.P.A. employee who assisted on supervisory work.
- (4) Cost of these employees charged to "Ribes Eradication" as they actually directed work of crews.
- (5) Eight of these employees also supervised work under W.P.A. Program.
- (6) Fifty-one of these employees were temporarily transferred to project under State W.P.A. Program during period July 7-18, 1941 pending final approval of Federal Agency W.P.A. project.



Table 81 - Summary of Ribes Eradication Work Conducted Under All Programs in Northeastern States During 1941

(Excludes nursery sanitation and cultivated black currant elimination)

Program	Regular Cooperative		C.C.C.	Federal W.P.A.	State W.P.A.	N.Y.A.	N.V.S.	Total
	Initial	Re-Bred.						
Total	67,272	153,262	17,906	121,034	594	25	1,416	208,247
Average								
Re-Bred.	153,262	38,041		170,095	5,086	555	286	367,325
Total	220,534	55,947		291,129	5,680	580	1,702	575,572
Average								
Initial	24,648	5,230		38,450	171	-	232	68,731
Re-Bred.	48,360	11,476		65,380	1,245	328	48	126,737
Total	72,908	16,706		103,830	1,416	328	280	195,468
Wild Ribes Pulled	1,396,093	822,224		3,462,809	15,010	4,779	20,828	5,721,743
Ribes Pulled	1,009	820		8,420	5	-	119	10,373
Man Days	14,832	22,897		40,137	434	32	277	78,609
Individuals	3,227.06	-		57.20	-	-	-	3,284.26
Towns	13,987.44	-		3,284.76	15.00	-	-	17,287.20
Counties	6,437.35	-		253.40	-	-	-	8,695.75
States	22,977.09	951.47		10,271.77	287.40	66.00	391.40	34,925.13
H.E. & P.Q.	11,467.50	-		215.27	-	-	-	11,682.77
C.C.C.	-	49,782.86		-	-	-	-	49,782.86
Federal W.P.A.	-	-		134,775.81	-	-	-	134,775.81
State W.P.A.	-	-		-	1,239.18	-	-	1,239.18
H.Y. A.	-	-		-	-	34.00	-	34.00
H.V. S.	-	-		-	-	-	624.30	624.30
Total	60,096.44	50,714.33		148,865.21	1,541.58	100.00	1,016.20	262,531.76
Per								
Cost	.275	.906		.511	.271	.172	.597	.466
Ribes	6.3	14.7		11.9	2.6	8.2	12.2	9.9
Man Days	.07	.41		.14	.08	.05	.16	.14

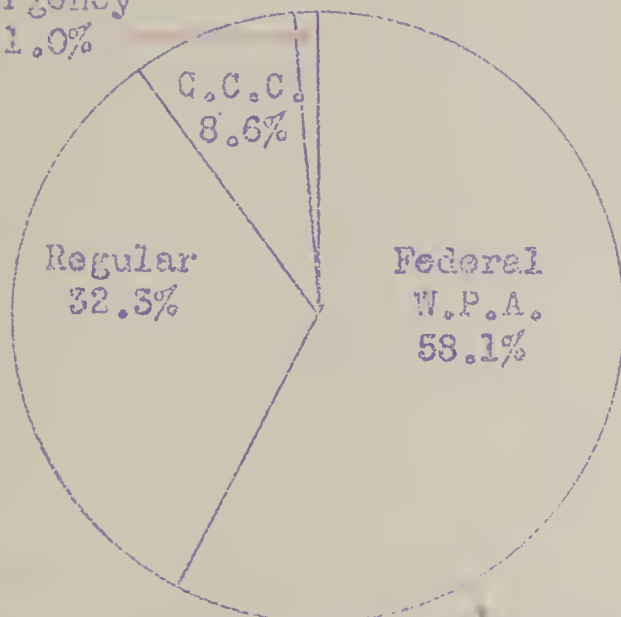


REPORT ON THE PROGRESS OF THE  
RIBES ERADICATION PROGRAM FOR THE YEAR 1941

(Excludes Nursery Sanitation and Cultivated Black Current Elimination)

Percentage of Total Acreage  
Cleared of Ribes  
Initial Eradication

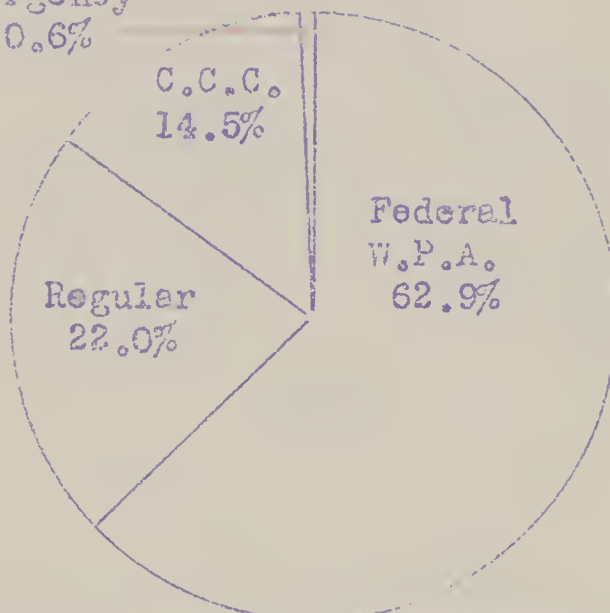
Other Emergency  
Programs 1.0%



Total Acreage Worked - 208,247

Percentage of Total  
Wild Ribes Destroyed  
Initial Eradication

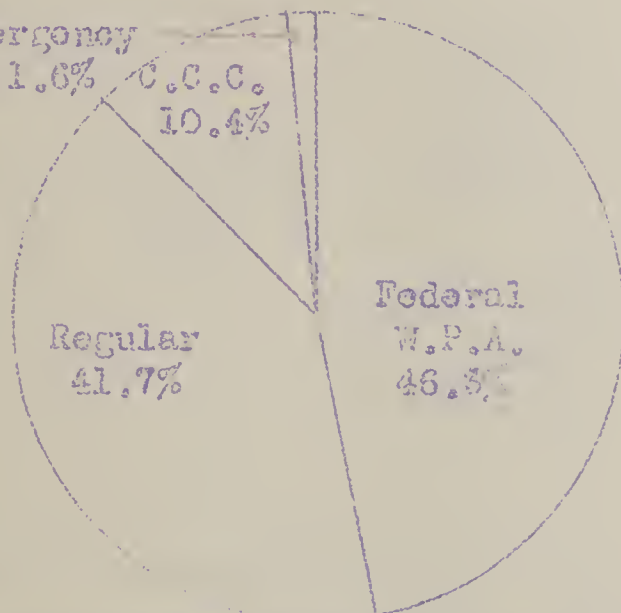
Other Emergency  
Programs 0.6%



Total Number of Ribes - 3,201,032

Reeradication

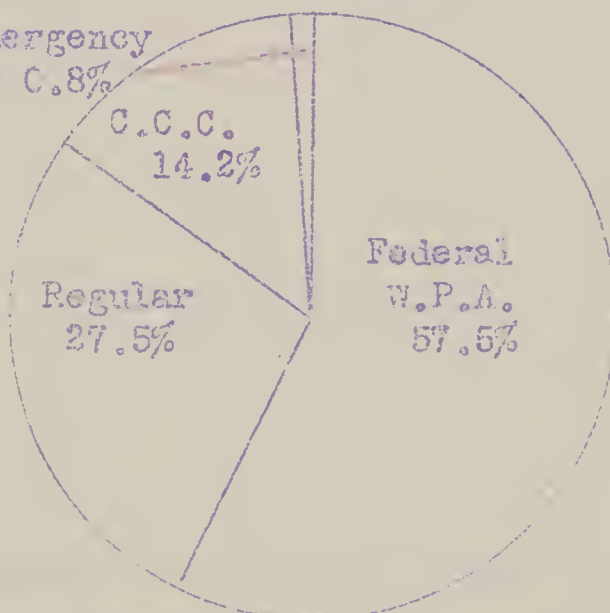
Other Emergency  
Programs 1.6%



Total Acreage Worked - 367,325

Reeradication

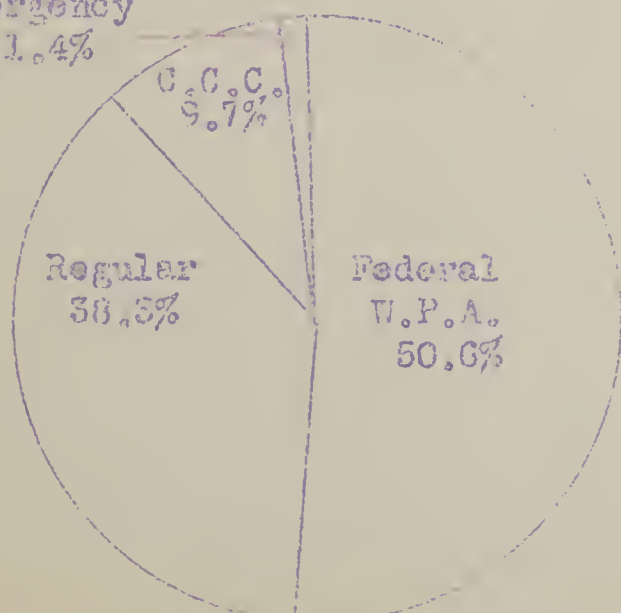
Other Emergency  
Programs 0.8%



Total Number of Ribes - 2,520,711

Initial & Reeradication

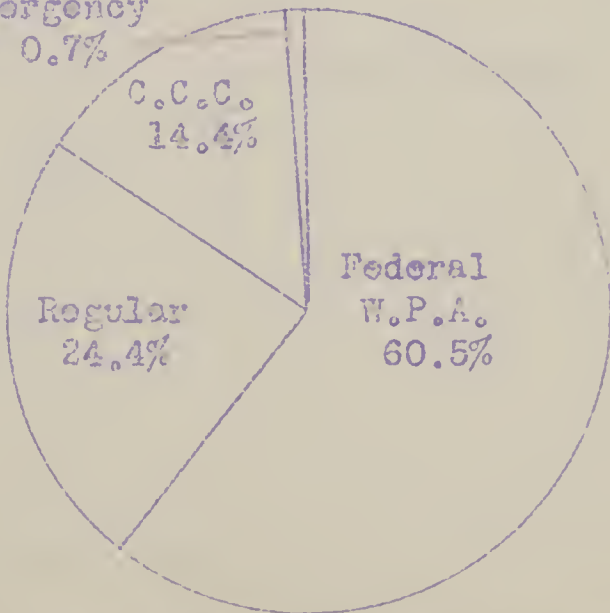
Other Emergency  
Programs 1.4%



Total Acreage Worked - 575,572

Initial & Reeradication

Other Emergency  
Programs 0.7%



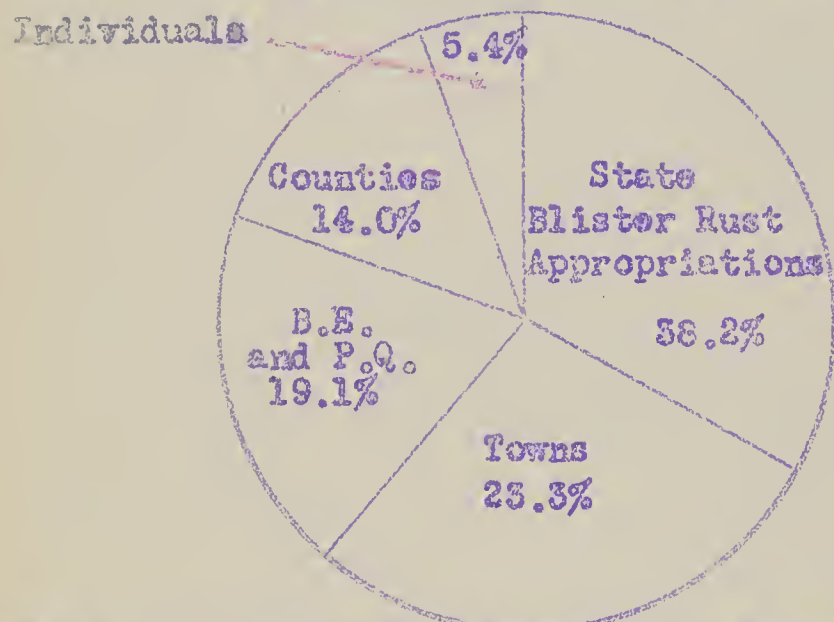
Total Number of Ribes - 5,721,743



SOURCE OF TOTAL FUNDS SPENT ON PROJECT "RIBES ERADICATION"  
UNDER EACH PROGRAM IN NORTHEASTERN STATES CALENDAR YEAR 1941

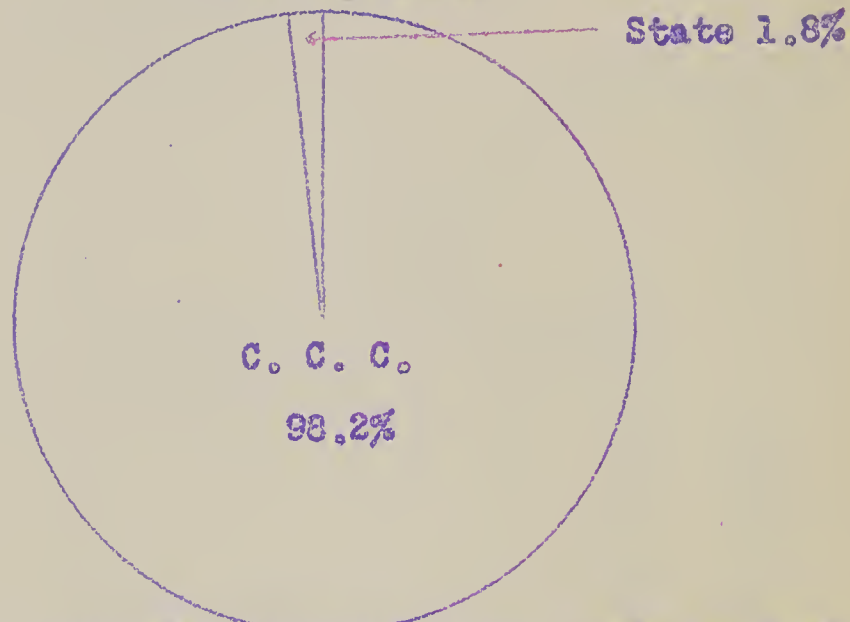
(Excludes Nursery Sanitation and Cultivated Black Currant Elimination)

Regular Cooperative Program



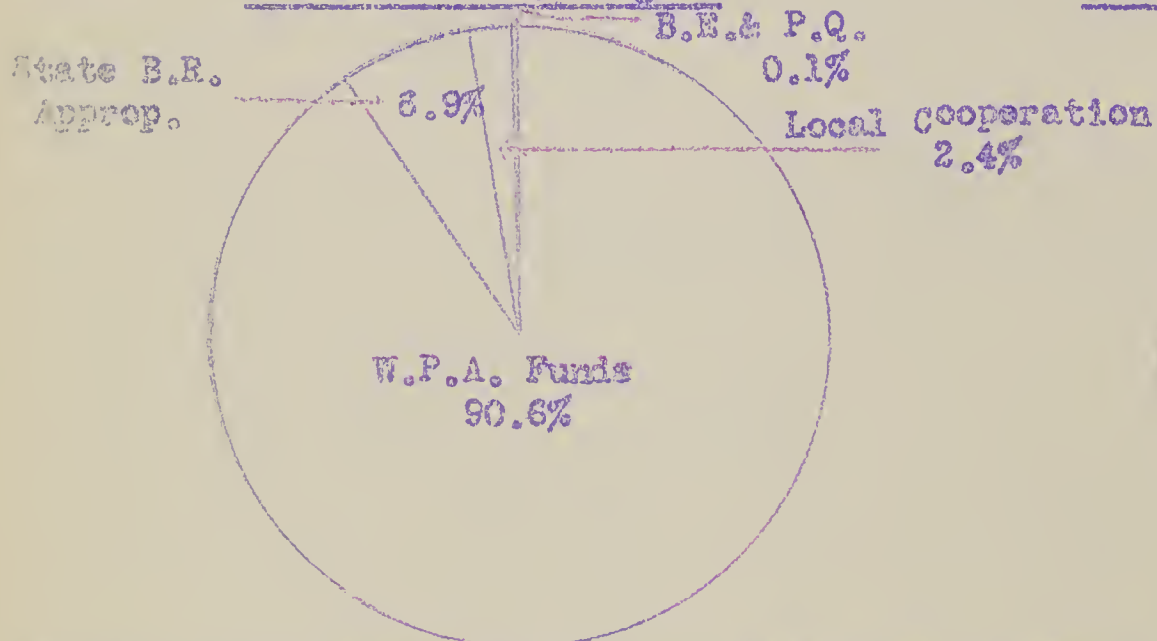
Total Cost of Ribes Eradication - \$60,096.44

C.C.C. Program



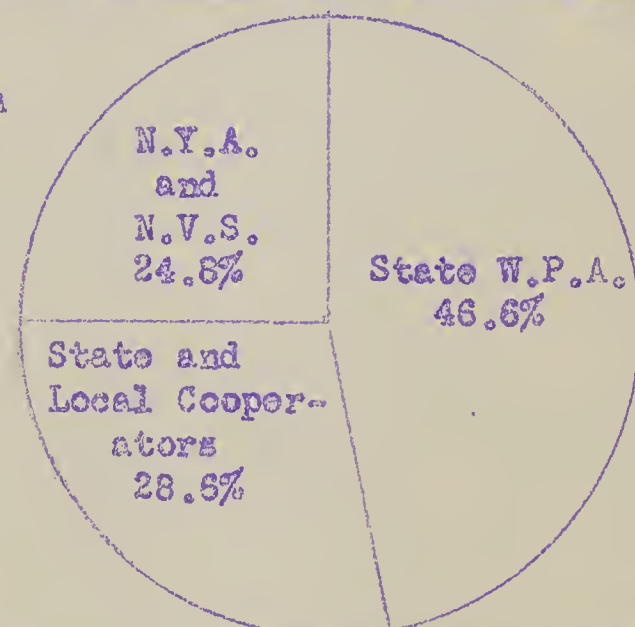
Total Cost of Ribes Eradication - \$50,714.33

Federal W.P.A. Program



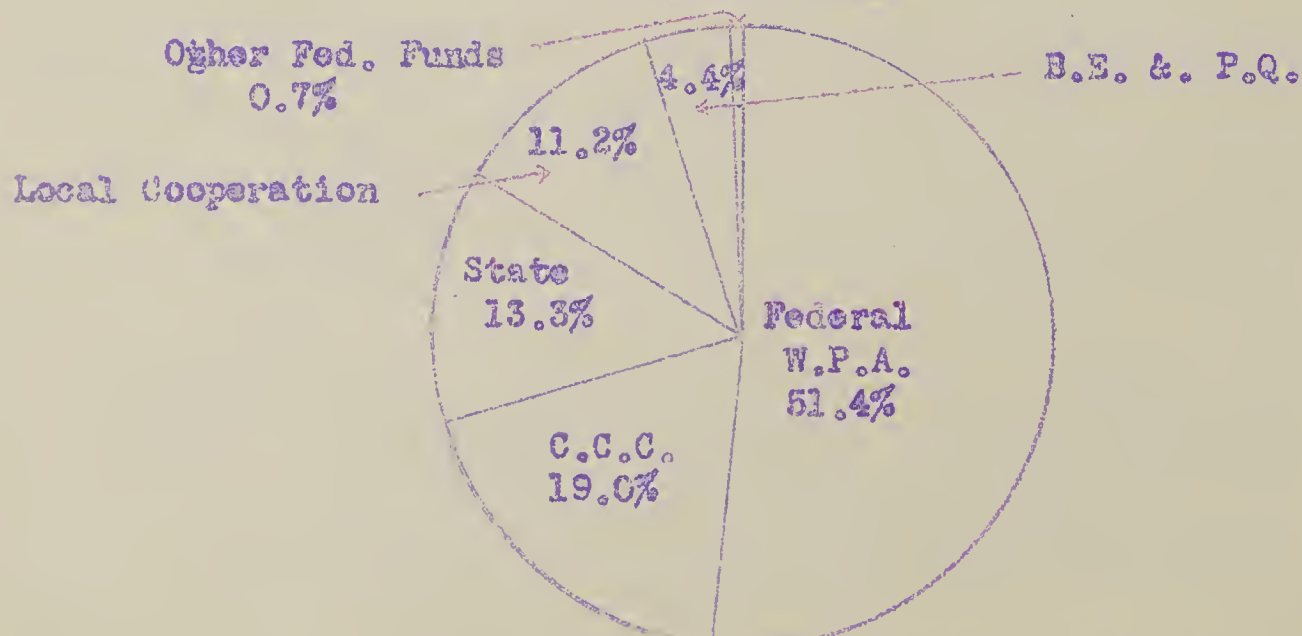
Total Cost of Ribes Eradication - \$148,363.21

Other Federal Emergency Programs



Total Cost of Ribes Eradication - \$2,657,78

All Programs



Total Cost of Ribes Eradication - \$262,331.76



Table 82 - Summary of Initial Ribes Eradication Work Performed  
Under All Programs in Northeastern States During 1941

(By States)

State	Maine	N. H.	Vt.	Mass.	R. I.	N. Y.	Penna.	Totals
Total acreage worked	22,587	12,786	18,097	7,974	62	112,662	34,079	208,247
Acreage pine protected	8,437	7,955	3,767	2,473	38	39,210	6,851	68,731
Wild	399,868	199,313	406,550	41,349	2,976	1,368,147	782,829	3,201,052
Ribes pulled	103	2,903	182	71	-	1,913	1,352	6,501
Cult.								
Total man days	3,489	2,159	4,855	608	35	12,275	10,381	33,802
Individuals	-	174.34	671.72	-	-	286.60	-	1,082.66
Towns	1,390.68	1,744.08	1,451.04	1,194.43	-	232.00	-	6,012.28
Counties	-	-	-	-	-	2,798.97	-	2,798.97
State	443.47	491.67	53.55	206.39	-	12,177.85	-	13,577.97
B.E. & P.Q.	307.91	522.85	261.48	327.70	-	3,112.70	77.12	4,609.76
C.C.C.	-	-	768.12	-	86.59	6,993.64	10,913.35	18,766.62
Federal W.P.A.	10,248.49	5,192.67	13,428.71	713.09	-	18,562.53	19,041.92	67,187.21
State W.P.A.	-	-	-	102.72	-	-	-	102.72
N.Y.A.	-	-	-	-	-	-	-	-
N.V.S.	-	-	-	-	-	546.40	-	546.40
Total	12,590.55	8,125.61	16,659.62	2,544.58	86.58	44,665.49	50,033.39	114,494.61
Cost	549	653	919	319	1.40	396	981	550
Ribes	17.7	16.8	22.6	5.3	65.0	12.1	23.0	16.4
Total	566.7	670.4	941.6	324.3	146.98	408.1	1,004.0	566.4



Table 83 - Summary of Re-Eradication Work Performed Under  
All Programs in Northeastern States During 1941

(By States)

States	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	Penn.	Totals
Total acreage worked	48,537	41,096	5,815	66,409	15,271	49,342	125,876	16,979	367,525
Acreage pine protected	17,725	25,675	1,580	18,833	7,760	7,097	44,275	3,792	126,737
	698,380	417,387	90,521	208,177	12,283	60,059	825,290	210,614	2,520,711
Acres pulled	321	190	28	2,032	197	43	789	269	3,869
Men days	7,576	6,354	1,196	5,305	1,817	1,452	11,727	9,080	44,807
Individuals	66.80	324.72	133.33	29.20	-	318.40	1,370.12	-	2,201.60
Towns	3,850.28	6,775.31	352.60	258.53	-	-	38.40	-	11,274.92
Counties	-	-	-	-	-	-	5,896.78	-	5,896.78
State	840.92	1,809.85	24.10	2,093.30	-	1,184.88	15,594.17	-	21,547.20
U. S. & F. O.	1,808.39	943.70	62.92	473.60	-	865.10	2,919.30	-	7,073.01
C. C. C.	616.19	-	68.17	227.39	1,728.37	1,801.05	6,664.14	19,910.86	31,016.17
Federal W. P. A.	19,102.33	15,061.21	3,641.55	15,095.10	4,048.26	-	10,387.66	252.49	67,588.60
State W. P. A.	-	-	-	1,136.46	-	-	-	-	1,136.46
N. Y. A.	-	-	-	-	-	-	34.00	-	34.00
N. V. S.	-	-	-	-	-	-	78.40	-	78.40
Total	26,234.91	24,814.77	4,341.70	19,313.38	5,776.63	4,169.43	42,982.97	20,163.35	147,847.14
Cost	.542	.604	.747	.291	.435	.085	.341	1.19	.402
Ribes	14.3	10.2	15.6	3.1	0.9	1.2	6.6	12.4	6.9
Man Days	.16	.16	.21	.08	.14	.03	.09	.53	.12



**Table 84 -** Summary of Initial and Re-Eradication Work Performed  
Under All Programs in Northeastern States During 1941

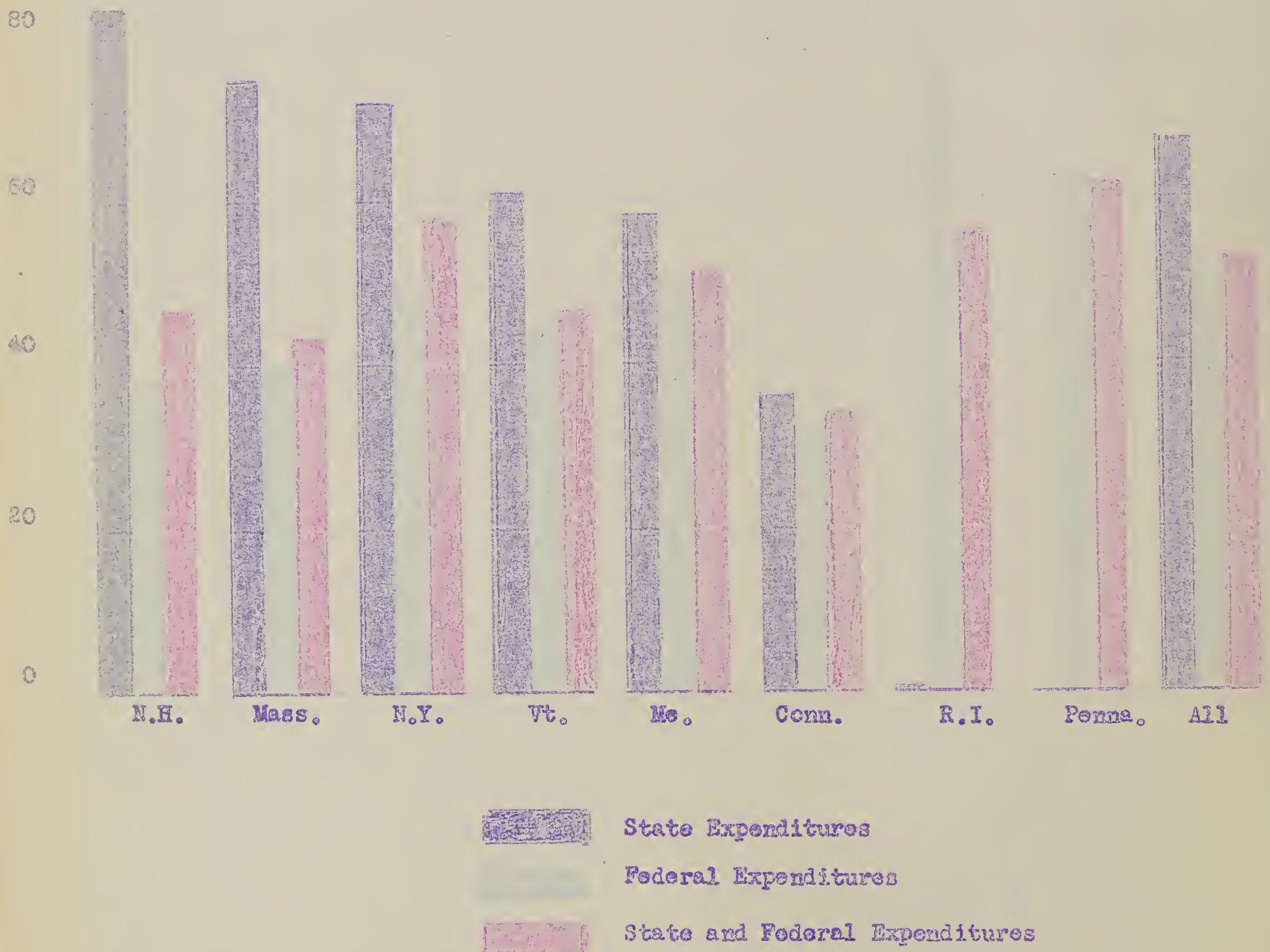
(By States)

State	Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	Penna.	Totals
No. Towns									
Total acreage worked	71,124	53,882	23,912	74,383	13,333	49,342	238,538	51,058	575,472
Acreage pine protected	26,162	33,630	5,347	21,306	7,793	7,097	83,435	10,643	135,403
Wild	1,096,248	616,700	497,071	249,526	15,259	60,059	2,193,437	993,443	5,721,772
Ribes pulled	424	3,093	210	2,103	197	43	2,702	1,601	10,277
Total man days	11,065	8,813	6,051	5,913	1,852	1,452	24,002	19,461	73,571
Individuals	66.80	399.06	864.08	29.20	-	318.40	1606.72	-	3,238.20
Towns	5,240.96	8,519.39	1,803.64	1,452.81	-	-	270.40	-	17,337.19
Counties	-	-	-	-	-	-	8,695.75	-	8,695.75
State	1,284.39	2,301.50	82.65	2,299.69	-	1,124.88	27,772.02	-	34,926.13
E.H. & P.Q.	2,116.50	1,465.55	524.40	801.50	-	865.10	6,032.00	77.12	11,002.77
C.C.C.	616.19	-	836.29	227.59	1,814.95	1,801.05	13,662.78	30,824.21	49,763.99
Federal W.P.A.	29,350.82	20,253.88	17,070.26	15,803.19	4,048.26	-	28,949.99	19,294.41	134,775.81
State W.P.A.	-	-	-	1,239.18	-	-	-	-	1,239.18
N.Y.A.	-	-	-	-	-	-	34.00	-	34.00
V.S.	-	-	-	-	-	-	624.80	-	624.80
Total	33,675.46	32,940.38	20,981.32	21,857.76	5,863.21	4,169.43	87,648.46	50,195.74	262,531.79
Cost	.544	.611	.877	.294	.440	.085	.367	.983	.685
Ribes	15.4	11.4	20.8	3.4	1.1	1.2	9.2	19.5	9.9
Man days	.16	.16	.25	.08	.14	.03	.10	.33	.14



PERCENTAGE OF TOTAL EXPENDITURES IN THE VARIOUS NORTHEASTERN STATES  
FOR RIBES ERADICATION WORK DURING 1941

100 Percent



Note: Includes regular Ribes eradication and nursery sanitation.



Table 85 - Summary of Nursery Sanitation Work Conducted Under All Programs in Northeastern States During 1941

State	Type of Erad.	No. Nurseries Worked	Acreage Worked	No.		Total Man Days	Cost				Per Acre			
				Ribes Pulled Wild	Ribes Pulled Cult.		Indiv.	State	B.E. & W.P.A. P.Q. (F.A.) C.C.C.	S.C.S.	Total	Cost Ribes	Man Days	
R. I.	Re-Erad.	4	2,163	2	-	14	-	13.41	-	42.32	-	55.73	.026	-
	Initial	2	309	10,625	13	19	34.52	58.83	-	-	-	93.35	.302	34.6
	Re-Erad.	5	1,712	195	-	12	8.00	-	134.72	-	-	142.72	.083	0.1
Conn.	Total	7	2,021	10,880	13	31	42.52	58.83	134.72	-	-	235.07	.117	5.4
	Initial	1	625	4,907	21	42	-	77.80	-	-	-	173.20	.277	7.9
	Re-Erad.	3	3,315	705	-	113	149.60	221.85	-	3.52	-	418.18	.126	0.2
N. Y.	Total	4	3,940	5,612	21	155	149.60	299.66	-	3.52	-	691.38	.162	1.5
	Re-Erad.	6	2,800	228	-	131	-	-	45.18	10.24	260.52	315.94	.113	0.1
	Initial	3	934	15,592	34	61	34.52	136.63	-	-	-	266.53	.285	16.7
Totals	Re-Erad.	18	9,990	1,130	-	270	157.60	235.27	179.90	56.08	260.52	932.57	.093	0.1
	Total	21	10,924	16,722	34	331	192.12	371.90	179.90	56.08	260.52	1,199.12	.113	1.6
	Percentage of Total Cost Paid by Cooperating Agencies							16.0	31.0	15.0	4.7	21.7	11.6	-



Table 86 - Pine and Control Area Mapping Conducted Under All Programs  
in Northeastern States During 1941

State	No. Towns	Acreage Mapped	Acreage Examined but Not Mapped	Miles Boundary Lines Painted	Total Man Days	Cost					Total
						Towns	State	B.E.& P.Q.	C.C.C.	W.P.A. (F.A.)	
Ala.	81	108,385	117,810	-	3,302	-	30.00	-	-	13,871.93	13,901.93
Ariz.	46	101,875	26,285	-	2,943	-	93.56	16.93	-	13,752.23	13,867.71
Cal.	20	76,365	210,413	18	1,455	254.63	-	-	-	5,912.55	6,167.16
Conn.	22	62,573	133,519	59	1,408	-	33.20	-	-	6,330.24	6,363.44
N. Y.	116	265,396	1,217,204	-	4,576	-	8,561.50	-	-	12,862.46	21,423.96
Penn.	114	42,122	-	503	1,939	-	-	-	1,101.52	5,830.60	6,932.12
Totals	399	656,716	1,705,231	580	15,623	254.63	8,723.26	16.92	1,101.52	58,560.01	68,656.34
Percentage of Total Cost Paid By Cooperating Agencies						0.4	12.7	-	1.6	85.3	100.0

Several hundred thousand acres were also examined but not mapped in Pennsylvania, but no definite record was kept of the acreage eliminated in that state.



Table 87 - Winter Bone Canker Elimination Work  
Under All Programs in Northeastern States During 1941

State		Maine	Vt.	Mass.	N. Y.	Totals
Estimated No. Pines Examined		217	36,965	12,717	107,205	157,104
No. Fatally Infected Pines Cut Down		5	1,198	1,303	3,621	6,127
No. Pines From Which Cankers Removed		87	1,661	256	2,721	4,725
No. Cankers Removed	Branch	232	2,119	270	3,221	5,842
	Stem	18	25	7	403	453
Total Man Days		51	422	557	801	1,831
Cost	Individuals	212.52	12.50	-	-	225.02
	Towns	-	8.00	287.25	-	295.25
	State	-	38.55	-	589.70	628.25
	W.P.A. (F.A.)	-	1,539.38	1,904.58	2,979.14	6,473.10
	Total	212.52	1,648.43	2,191.83	3,568.84	7,621.62

State Compensation For Cultivated Ribes Destroyed  
Under all Programs in Northeastern States During 1941

No compensation was paid for cultivated Ribes destroyed during 1941 except in Pennsylvania where five individuals were paid \$4.45 (value of nursery stock) for 46 bushes destroyed in connection with the nursery sanitation project.



Table 88 - Total State Expenditures, By Cooperating Agencies, For  
Blister Rust Control Work in Northeastern States During Calendar Year 1941

State	State Funds	Town Funds	Individual Funds or Labor	County Funds	Total
Maine	5,835.04	5,240.96	279.32	-	11,355.32
N. H.	4,485.23	8,519.39	399.06	-	13,403.68
Vt.	1,590.23	2,066.27	876.58	-	4,533.08
Mass.	3,325.79	1,740.06	29.20	-	5,095.05
R. I.	2,914.55	-	-	-	2,914.55
Conn.	4,096.84	-	360.92	-	4,457.76
N. Y.	43,402.82	270.40	1,756.32	8,695.75	54,125.29
Penn.	878.00	-	4.45	-	882.45
Totals	66,528.50	17,857.08	3,105.85	8,695.75	96,767.18
% Total	68.8	18.4	3.8	9.0	100.0



Table 39 - Total State Expenditures During The Calendar Year 1941 For The Various Blister Rust Control Projects in The Respective Northeastern States

State	Supervision and B.R.C. Agent Activities	Ribes Eradication	Erad. Assistants and Checkers	Ribes Compensation	Nursery Sanitation	Blister Rust Canker Elimination	Field Data		Total
							Mapping	General	
Maine	2,186.52	6,592.15	2,334.13	-	-	212.52	30.00	-	11,366.80
N. H.	1,429.57	11,219.95	575.60	-	-	-	93.56	60.00	13,409.85
Vt.	1,469.03	2,750.37	-	-	-	59.05	254.63	-	4,683.05
Mass.	327.06	3,781.70	665.34	-	-	287.25	33.20	-	5,096.05
R. I.	2,901.14	-	-	-	13.41	-	-	-	2,914.55
Conn.	2,774.23	1,503.23	-	-	101.35	-	-	73.90	4,457.75
N. Y.	-	38,344.39	5,429.54	-	442.26	689.70	3,561.50	750.40	54,186.79
Penna.	878.00	-	-	4.45	-	-	-	-	882.45
Totals	11,965.55	64,192.34	9,005.11	4.45	564.02	1,148.52	3,977.89	909.30	96,757.13
% Total	12.4	66.3	9.3	-	0.6	1.2	9.3	0.9	100.0



Table 90 - Total Federal Expenditures During The Calendar Year 1941 For the Various Blister Rust Control Projects in the Respective Northeastern States

State	Supervision and B.R.C. Agent Activities	Ribes Eradication	Brad. Assistants and Checkers	Nursery Sanitation	Blister Rust Canker Elimination	Field Data		Total
						Mapping	General	
Maine	17,521.81	32,083.31	122.21	-	-	13,871.93	666.00	64,265.26
N. H.	17,228.78	21,720.43	200.96	-	-	13,769.15	4,200.84	57,120.15
Vt.	12,665.36	19,230.95	180.00	-	1,589.38	5,912.55	1,915.00	40,515.24
Mass.	17,284.77	18,076.06	-	-	1,904.58	6,330.24	1,688.40	45,234.05
R. I.	1,421.37	5,853.21	247.74	42.32	-	-	-	7,674.94
Conn.	5,779.59	2,666.15	-	154.72	-	-	-	8,580.85
N. Y.	26,637.79	49,303.57	4,462.07	142.12	2,979.14	12,862.46	3,618.26	100,005.41
Penna.	14,623.34	50,195.74	6,833.56	315.94	-	6,932.12	2,131.53	81,032.23
Totals	115,183.51	198,139.42	12,146.53	635.10	6,473.10	59,678.45	14,220.03	404,476.14
% Total	28.0	49.0	3.0	0.1	1.6	14.8	3.5	100.0

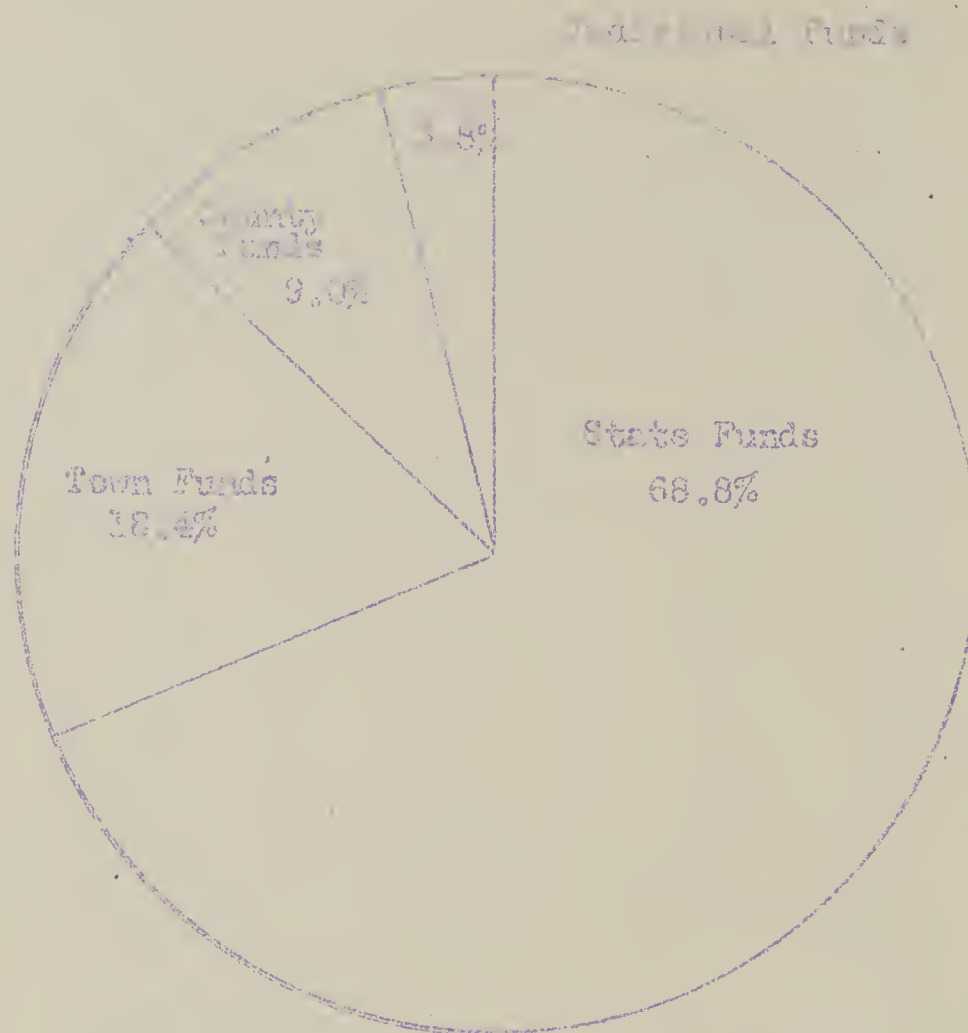


Table 91. Total State and Federal Expenditures For Blister Rust Control  
in Northeastern States During Calendar Year 1941

State	Total State Expenditures	B. E. and P. Q.	Park Service	Federal Expenditures			C. C. C.	S. O. S.	N. Y. A.	N. V. S.	Total	Total State and Federal Expenditures
				E. A. Projects	W. P. A. State Project	Adm.						
Maine	11,355.32	17,019.35	666.00	45,841.51	-	-	738.40	-	-	-	64,265.26	75,624.58
N. H.	13,403.68	17,391.55	-	39,597.45	-	131.17	-	-	-	-	37,120.15	73,521.83
Vt.	4,535.08	8,625.48	-	30,571.47	-	-	1,016.29	-	-	-	40,513.24	45,048.32
Mass.	5,095.05	16,375.12	-	27,401.23	1,239.18	41.03	227.39	-	-	-	45,234.05	50,329.17
R. I.	2,914.55	1,191.65	-	4,212.29	-	108.53	2,162.69	-	-	-	7,674.94	10,586.49
Conn.	4,457.76	6,779.31	-	-	-	-	1,801.05	-	-	-	3,580.86	13,006.42
N. Y.	54,125.29	22,131.28	-	58,815.08	-	-	18,104.85	138.60	34.00	733.60	100,005.41	164,140.70
Penna.	882.45	9,557.39	-	50,403.30	-	91.50	40,980.04	-	-	-	81,032.23	81,914.68
Totals	96,767.18	99,121.59	666.00	237,140.38	1,239.18	372.08	65,030.71	138.60	34.00	733.60	404,476.14	501,246.35
% of Total	19.3	19.8	0.1	47.3	0.3		15.0		0.2		80.7	100.0

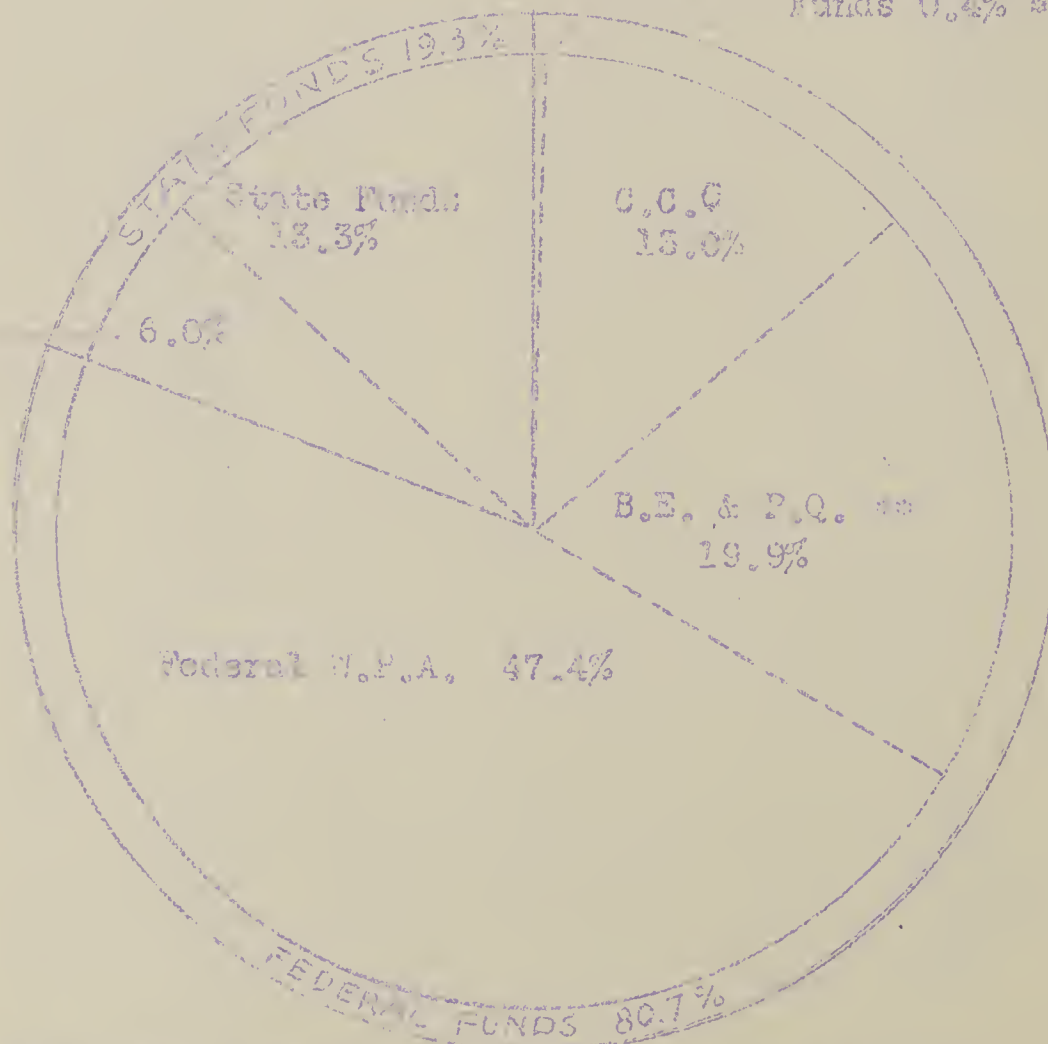


PERCENTAGE TOTAL BLISTER RUST CONTROL EXPENDITURES  
IN NORTHEASTERN STATES DURING CALENDAR YEAR 1941  
PAID BY VARIOUS COOPERATING AGENCIES



Total State Expenditures - \$96,767.18

Other Federal Emergency  
Funds 0.4% \*



Total State and Federal Expenditures - \$501,243.32

\* Includes N.P.A. funds expended under State W.P.A. Program.

See funds - also \$600.00 see funds allotted to National Park Service for work at Acadia Park.

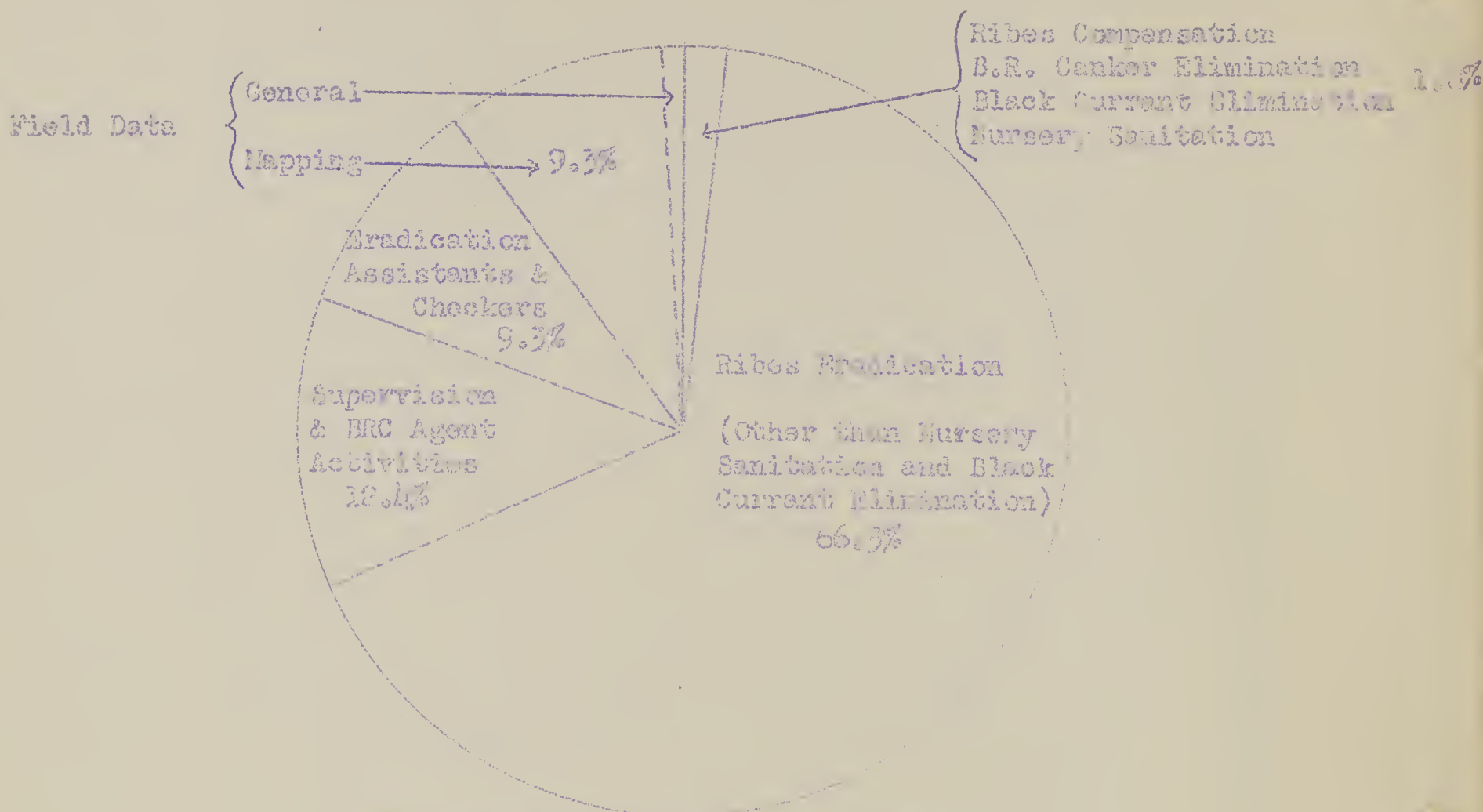


Table 92 = Total State and Federal Expenditures During Calendar Year 1942 for the  
Various Effector Rust Control Projects in the Northern Plains States

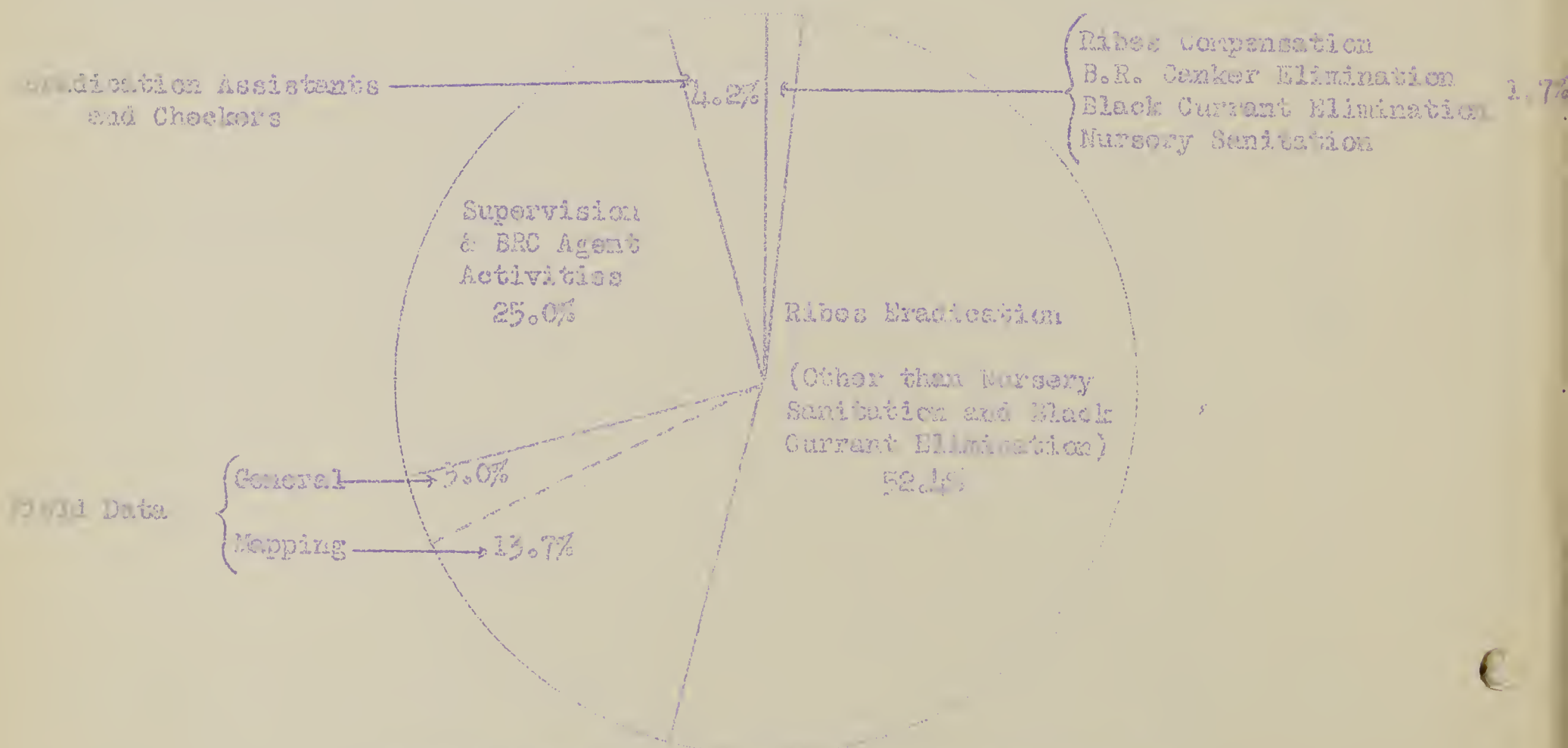
State	Supervision and B.R.C. Agent Activities	Wiles Prediction	Prediction Assistants and Checkers	Riben Compen- sation	Forestry Sani- tation	Effector Rust Control Elimination	Field Data		Total
							Mapping	General	
Maine	12,009.83	35,670.46	3,480.34	-	-	212.82	15,801.30	255.10	48,697.93
N. H.	16,058.35	38,840.98	773.55	-	-	-	13,947.11	4,580.84	70,525.53
Vt.	14,154.36	20,801.02	130.00	-	-	1,648.45	6,167.10	1,615.00	46,085.93
Mass.	17,611.05	51,857.76	385.14	-	-	2,101.83	6,580.44	1,668.40	69,295.12
N. Y.	4,322.31	6,955.21	247.74	-	55.73	-	-	-	10,245.01
Conn.	6,554.22	4,169.13	-	-	228.07	-	-	73.90	12,038.45
N. Y.	20,637.79	67,644.45	4,821.61	-	591.52	3,550.34	21,423.90	1,357.53	151,180.97
Penn.	15,501.34	50,195.74	6,633.86	4.45	315.94	-	6,932.12	2,131.53	91,914.84
Totals	125,149.06	369,341.73	13,151.64	8.45	1,199.12	7,621.62	68,653.84	15,139.54	601,465.37
% Total	25.0	52.4	4.2	-	0.2	1.5	13.7	3.0	100.0



(Percentage of Total Spent on Each Project)



Total State Expenditures - \$96,767.18



Total State and Federal Expenditures - \$501,243.32



BLISTER RUST CONTROL ACTIVITIES AND ACCOMPLISHMENTS

UNDER ALL PROGRAMS IN THE NORTHEASTERN STATES

DURING PERIOD 1918-1941, INCLUSIVE







Table 93- Summary of All Ribes Eradication Work in Northeastern States  
During Period 1918-1941 Inclusive By Programs

Program		Regular Cooperative	C.C.C.	P.W.A.	Federal F.P.A.	State and Local S.R.A.	C.W.A. and S.R.A.	A.R.A.	S.C.S.	N.Y.A.	N.V.S.	Totals
Total	Initial	8,207,270	1,379,780	179,970	1,927,570	88,804	20,547	10,639	20,451	373	1416	11,796,569
Acreage	Re-Erad.	1,564,717	1,200,383	162,541	1,473,140	50,385	7,704	5,714	10,120	555	286	4,521,553
Worked	Total	9,771,987	2,580,163	342,511	3,400,710	139,189	28,251	16,353	30,571	928	1702	16,318,122
Number	Initial	102,539,847	49,784,592	7,639,253	63,571,156	180,235	174,137	112,491	651,044	4280	19,608	226,083,043
Wild Ribes	Re-Erad.	9,307,215	16,666,472	1,368,399	23,753,517	576,890	158,586	13,779	18,830	4741	1,220	51,811,706
Pulled	Total	111,847,062	66,451,064	9,007,652	87,324,673	237,125	332,723	126,270	670,274	9021	20,828	277,894,749
Number	Initial	608,552	75,026	7,297	85,232	2,215	1,600	948	360	-	65	781,204
Cult. Ribes	Re-Erad.	24,456	18,368	5,379	32,847	1,306	306	110	-	-	54	82,822
Pulled	Total	633,008	93,394	12,676	118,079	3,521	1,906	1,058	360	-	119	864,026
Total	Initial	658,230	683,906	33,419	455,738	6,476	4,500	3,564	9,944	85	241	1,855,670
Man	Re-Erad.	100,939	453,593	16,156	278,268	8,986	3,270	772	2,485	31	36	844,538
Days	Total	759,169	1,137,504	49,575	734,006	15,462	7,770	4,336	12,429	116	277	2,700,208
Total Cost of All Ribes Erad. Work	Local Coop.	1,080,215.31	-	3,793.65	48,306.75	1,097.80	1,143.00	-	-	-	-	1,138,556.03
	State	1,109,013.26	29,718.89	13,420.75	118,550.00	343.80	2,791.98	305.80	1,857.90	166.00	391.40	1,274,000.36
	B.F.I.	266,286.41	-	-	-	-	-	-	-	-	-	266,286.41
	B.E. & P.Q.	11,530.55	-	-	229.00	-	-	-	-	-	-	11,754.35
	Park Service	8,345.53	-	-	-	-	-	-	-	-	-	8,345.53
	Forest Service	2,887.84	-	-	-	-	-	-	-	-	-	2,887.84
	C.C.C.	-	1,904,932.80	-	-	-	-	-	-	-	-	1,904,932.80
	P.W.A.	-	-	181,831.14	-	-	238.20	-	-	-	-	182,119.34
	W.P.A.	38.03	-	-	2,515,047.72	2,368.85	-	-	245.76	-	-	2,584,700.55
	C.W.A. & S.R.A.	-	-	-	-	-	27,902.90	-	-	-	-	27,902.90
	A.R.A.	-	-	-	-	-	-	15,057.94	-	-	-	15,057.94
	S.C.S.	-	-	-	-	-	-	-	21,594.87	-	-	21,594.87
	N.Y.A. & N.V.S.	-	-	-	-	-	-	-	-	254.80	624.80	879.60
	Total	2,478,316.93	1,934,651.69	199,035.54	2,530,898.47	5,466.65	32,076.08	15,363.74	23,698.53	420.80	1016.20	7,439,018.52
Per Acre	Cost	.254	.750	.581	.781	.670	1.14	.940	.775	.453	.597	.456
Values for	Ribes	11.4	25.8	26.5	25.8	12.2	11.8	7.7	21.9	9.7	12.2	17.0
All Work	Man Days	.08	.44	.14	.21	.11	.28	.27	.41	.13	.16	.17

Note: Acreage of initial Ribes eradication work under Regular Cooperative Program adjusted by deducting 1,017,911 acres from total of yearly acreages reported since 1918. This reduction represents all acre that was included in original acreage figures for Maine during period 1921-1930, inclusive, as explained under Table 94.

In Table 93 which summarizes the eradication work by programs, it was possible to adjust the re-eradication acreages as in Table 95 which lists the totals by states.



COMPARISON OF AVERAGE YIELDS OF RIBES PER ACRE FOR RIBES RECLAMATION WORK

100 THOUSAND STATES - 1935 to 1941, INCLUSIVE

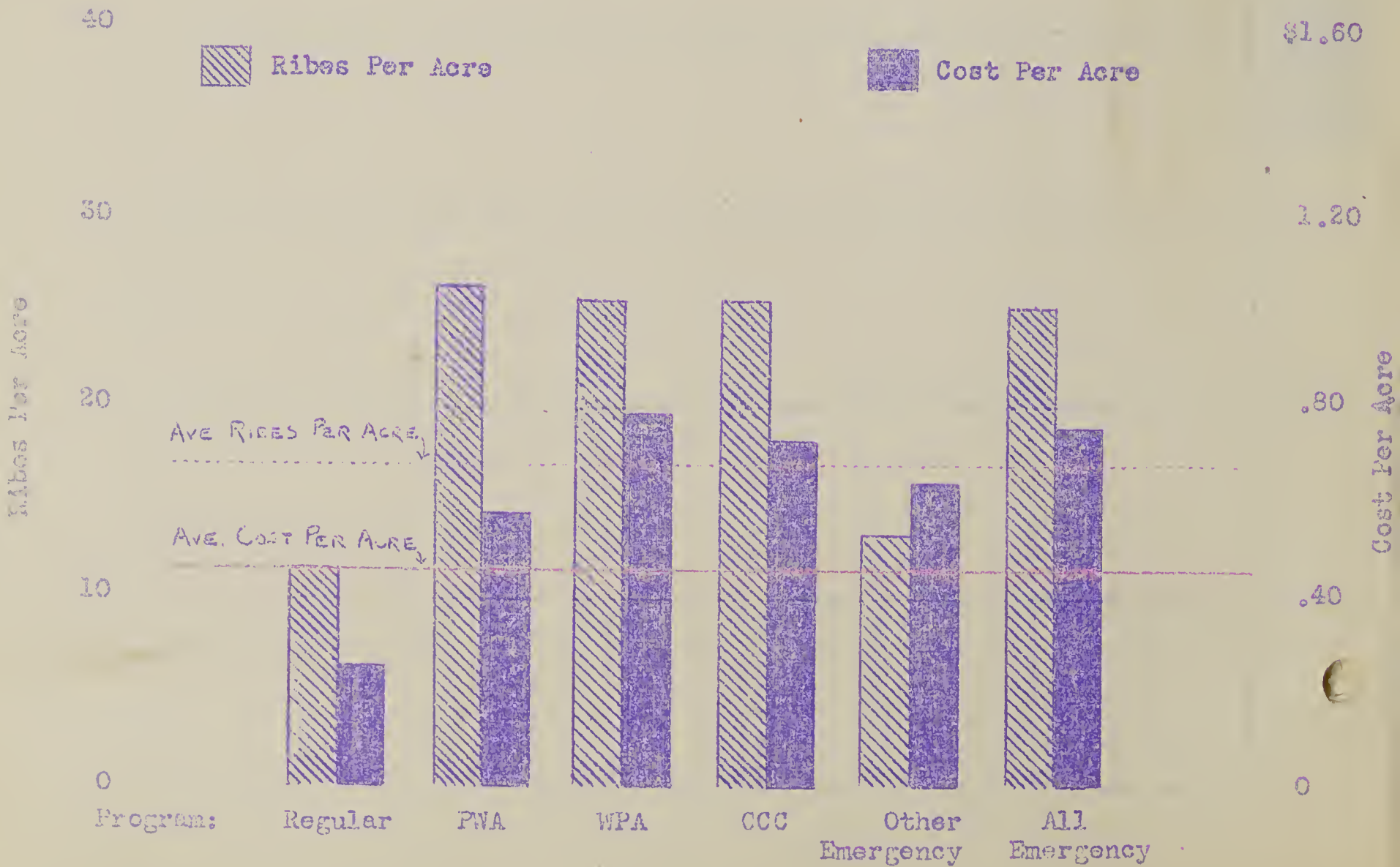
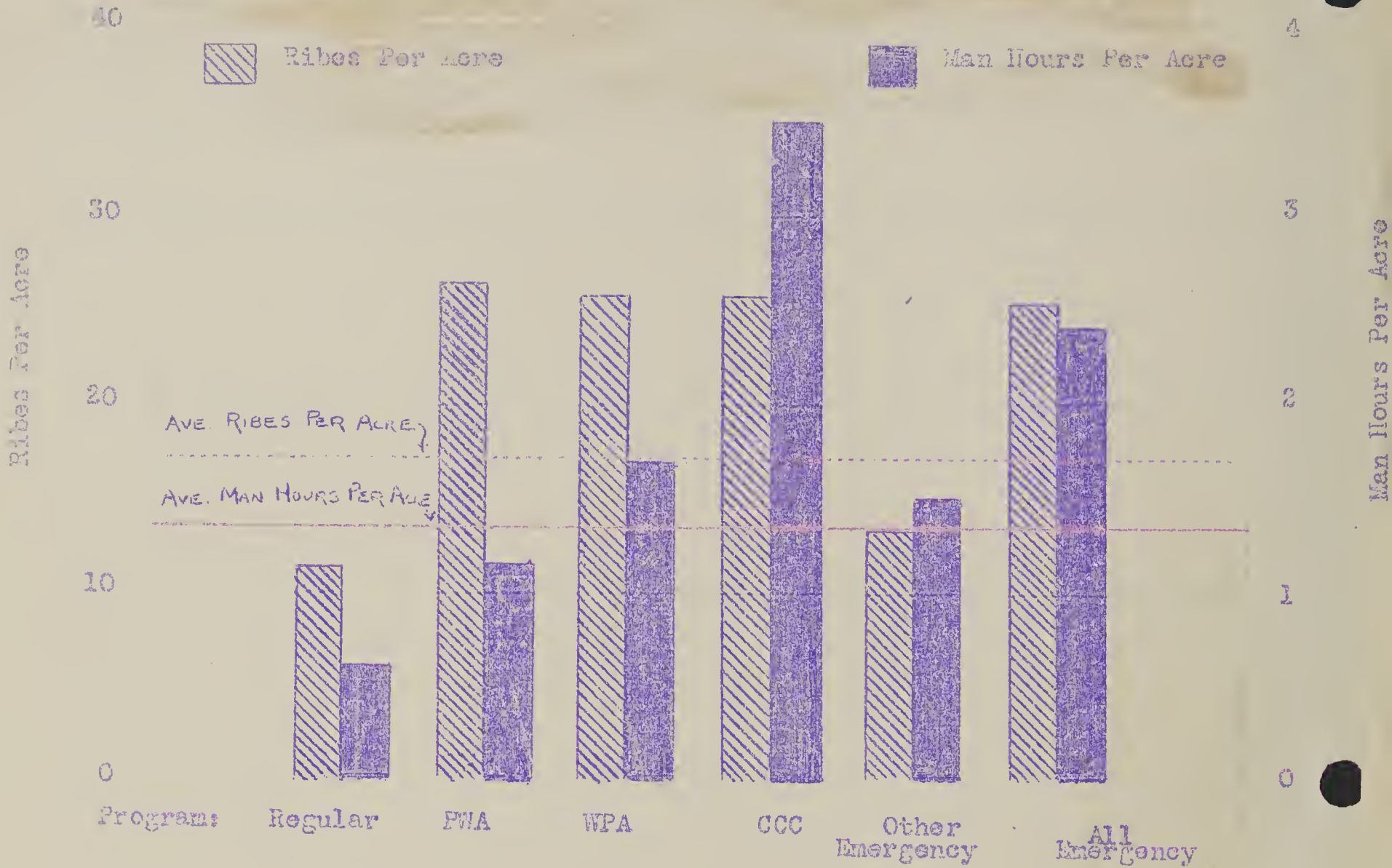




Table 94 -

SUMMARY OF INITIAL RIBES ERADICATION WORK IN NORTHEASTERN STATES ALL YEARS

INCLUDES ALL RIBES ERADICATION WORK PERFORMED UNDER ALL PROGRAMS HOWEVER, ALL BLACK CURRANT ELIMINATION AND NURSERY SANITATION PROJECTS SINCE 1929 ARE EXCLUDED

STATE	1918					1919					1920					1921					1922					1923					
	Acres		No Ribes		Per Acre Cost Ribes	Total Cost	Acres	No Ribes		Per Acre Cost Ribes	Total Cost	Acres	No Ribes		Per Acre Cost Ribes	Total Cost	Acres	No Ribes		Total Cost	Per Acre Cost Ribes	Acres	No Ribes		Total Cost	Per Acre Cost Ribes	Acres	No Ribes		Total Cost	Per Acre Cost Ribes
	Wild	Cult	Wild	Cult				Wild	Cult				Wild	Cult				Wild	Cult				Wild	Cult				Wild	Cult		
MAINE	4910	91862	235	3 79 23	105 187	9216	-	6 136 10	67 362	10285	176768	636	4394 05	49 172	136221	54304	708	3398 76	32 4	190209	449287	3688	8012 48	04 25	336432	1208 938	24779	51604 66	06 3 6		
N.H.	66292	959515	8427	26 09 09	35 145	163415	21171	35571 06	22 101	203375	2061996	22706	3703866	19 101	137827	1654443	9715	22640 95	16 120	178489	1816829	9061	28706 64	16 102	267807	5490 130	24779	51604 66	06 3 6		
N.J.	4696	78563	77	5 182 64	110 168	2460	96749	2214 26	90 393	4501	36294	74	5391 60	75 81	6319	60537	131	3464 01	55 56	13512	201906	812	6102 24	46 150	272246	1254	8080 33	34 114			
MASS.	18706	356067	1919	15 005 31	84 190	10849	201882	2374	8156 18	75 186	19389	1224306	1421	10422 87	34 651	632 618	4631	10290 54	51 192	64502	1578294	2368	13715 09	21 243	184988	1750 693	14887	26802 33	15 95		
R.I.	12115	15927	492	3 527 97	28 11	40411	45320	1651	5609 74	14 11	23164	3393	3796 92	16 5	26971	16022	352	3826 92	14 6	11500	11764	132	4640 00	16 10	28068	13011	1464	170156	06 05		
CONN.	800	10000	61	400 00	50 123	2500	31000	2523 34	93 124	2170	42793	2	1974 70	91 197	8000	41470	6	2664 07	33 52	6175	137501	-	4651 30	75 222	14062	208 333	240	6863 14	49 205		
N.Y.	29537	904155	11000	43 619 16	148 308	23194	2181286	2675	79689 08	543 940	7438	735190	47	32043 94	431 103	14185	1275709	21	46600 75	329 899	11030	534231	-	34082 70	309 593	15459	906617	367	4422978	2 81 573	
ALL STATES	157458	2415887	22150	99 863 40	73 176	252045	4549948	27877	1395003 6	55 181	270310	4301940	23936	35662 74	55 159	302454	3737103	15762	92883 96	24 98	475217	4849812	16061	96818 65	20 102	870766	17930028	55074	15860938	10 102	

STATE	1924				1925				1926				1927				1928				1929							
	Acres	No Ribes		Per Acre Cost Ribes	Acres	No Ribes	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes	Cult	Total Cost	Per Acre Cost Ribes				
		Wild	Cult																						Wild	Cult	Wild	Cult
MAINE	599987	1829349	11599	22134.31	06.46	274034	1700870	15041	20010.86	07.62	303709	3052380	17552	20915.42	07.01	260471	2582159	10225	22015.46	09.99	202359	1577254	8778	22417.60	11.78	234459	21959.78	09.91
N.H.	524734	4023359	14941	52599.44	16.124	257702	3100730	5996	42408.99	18.134	178281	2968421	5612	41199.78	23.166	151985	2176006	2169	31222.55	21.143	145329	2041412	4276	31572.55	22.140	155719	30761.38	20.120
V.T.	24114	177187	592	8951.76	36.72	25226	310717	640	8587.67	34.125	16800	227908	1404	8281.99	49.156	17090	262306	314	7592.22	45.154	14475	147930	144	6020.30	42.102	10295	524587	51.85
MASS.	138465	2023070	38777	34648.43	22.128	190945	745446	53610	21555.13	11.39	185085	1078021	25596	26697.59	15.59	284411	864090	32735	26077.95	09.30	227058	497965	54146	28319.45	15.22	243879	29827.84	12.54
R.I.	47480	22361	2993	20920.01	04.05	25440	4994	1928	1519.04	06.02	25557	16458	205	1674.23	07.06	9735	22279	521	1700.86	18.23	21461	98412	1289	6727.34	09.13	28394	7128.14	25.45
CONN.	17215	289034	2447	5981.73	35.167	13755	270747	680	4592.03	33.197	21687	175137	318	4775.59	22.01	12068	40441	715	1784.63	15.54	75981	1740941	9411	45370.15	55.540	118465	58923.51	50.161
N.Y.	25198	1061368	2501	40907.02	162.421	55611	995445	1135	33325.38	105.296	56994	1075841	2087	57052.10	100.291	61676	1393905	2207	44809.78	73.226	85434	1740941	9411	45370.15	55.540	376626	69.604	60.604
PENNA.	997793	9425728	73880	167914.72	17.94	800893	7206949	39048	133057.10	17.90	766099	8594966	50772	140596.70	18.112	797436	7341240	48884	155065.45	17.92	770117	6121689	58459	143456.81	19.79	796670	157803.18	20.91
ALL STATES	997793	9425728	73880	167914.72	17.94	800893	7206949	39048	133057.10	17.90	766099	8594966	50772	140596.70	18.112	797436	7341240	48884	155065.45	17.92	770117	6121689	58459	143456.81	19.79	796670	157803.18	20.91

STATE	1930				1931				1932				1933				1934				1935									
	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes					
MAINE	197075	2096207	0357	23463 51	12 106	114344	1286322	4846	18429 60	16 112	31131	735489	3569	11981 89	23 144	75155	1885886	4919	37137 52	31 258	89896	3860322	2518	55658 50	62 432	134917	4965441	2944	105269 31	70 36
N.H.	210157	2807130	3192	47766 94	22 129	158004	2891692	4022	46596 31	30 183	79924	866328	1066	14704 96	18 108	77015	4122871	752	48211 90	61 535	75478	5900360	8	47364 53	63 464	89316	3469646	575	63255 07	71 38
V.T.	7245	74039	85	4244 43	39 102	8123	38827	129	5144 30	39 48	7476	34525	4060	232624	223	1209521	232624	223	1209521	70 155	19485	463240	20	14511 69	75 238	20499 50	481377	210	28498 50	82 165
MASS.	108685	996376	8072	15294 76	14 92	29815	128179	4270	649193	22 45	13584	106377	967	3196 38	24 78	14003	223388	48	54516	40 16	12713	834977	1675	11352 77	89 657	45417	753166	14352	28498 50	63 166
R.I.	27253	33350	340	3013 79	11 12	1510	23776	260	73005	48 171	497	205	214	246 75	50 4	80	129	-	9707	12 16	36050	77987	1202	9320 12	26 22	48313	556328	4176	20575 44	43 74
CONN.	89894	1306498	4302	47116 14	52 145	118353	1484224	4956	55433 61	47 125	145075	1223386	6198	49370 12	34 85	75773	635088	5115	31653 48	42 87	182389	3687497	8115	111684 67	61 312	243452	6410662	13060	213858 17	87 261
N.J.	11745	656768	863	8631 48	74 559	24016	828258	703	9797 18	42 345	20212	802027	3342	6064 70	30 397	19799	1704794	212	22360 01	113 861	53184	4967191	2324	37171 25	112 1497	64879	18665	351	2096 33	41 126
PENNA.	660032	7970368	30009	149330 09	23 121	454567	6683978	19186	140805 07	51 147	317919	3768737	19416	87925 98	28 119	271145	8828780	9269	157088 35	57 319	461880	19435896	17023	308140 46	67 421	684285	6244526	84982	170189 03	171 562
ALL STATES	997793	9425728	73880	167914 72	17 94	800893	7206949	39048	133057 10	17 90	766099	8594966	50772	140596 70	18 112	797436	7341240	48884	155065 45	17 92	770117	6121689	58459	143456 81	19 79	684285	22719742	44440	374353 62	84 352

STATE	1936				1937				1938				1939				1940				1941			
	Acres	No Ribes Wild	Cult	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost Ribes
MAINE	193842	919352	4162	23088 23	80 599	37557	1816977	791	32699 81	87 484	5234207	2216 896	41034 964	32807	584292 87	26 108	28142	1443244	1748	30337 89	108 519	37006	117090	1772
N.H.	140940	626569	4350	106442 83	76 445	55295	1595176	1209	28253 70	74 482	3383128	147905	832412 37	27 73	31588	1007899	289	21497 05	68 321	19872	825156	1314	18377 51	93 415
V.T.	85839	427923	916	10231 40	119 498	32736	1096116	819	24936 24	76 335	370472	384032	843195	1970	259445 10	68 225	28473	674842	1085	31382 97	75 237	22113	1057273	308
MASS.	59650	791298	889	35943 29	60 153	14840	160614	159	5544 10	37108	1917635	255288	3584622	19 82	31159	1832596	970	7204 55	23 59	39467	37238	1249	12412 55	32 96
R.I.	4199	4087	445	2933 48	70 10	7239	6856	297	348570	48 09	310954	310954	214672	18341	45834 16	14 07	6872	24162	-	3433 48	50 38	431	1294	348
CONN.	42269	377356	2940	14935 32	35 53	3144	11743	515	269363	52 23	361328	393525	2195132	27003	101133 16	26 36	10231	13618	1648	6339 66	62 13	23950	135677	356
N.Y.	429637	13618021	23791	229187 91	99 317	178205	5556 617	4762	15928972	89 312	1926817	1926817	50798 519	103945	1634884 95	85 264	135448	3158394	4640	127237 63	94 253	127340	2753295	7925
PENNA.	2565	6795	199	229107	89 26	46207	2863279	9418	8546878	129 432	16742	16742	47780	1715	528433	32 29	38932	2452 117	3461	7478103	127 416	67477	1862825	2345
ALL STATES	1040303	41465138	51865	1018849 20	97 396	377223	13107818	17770	340364 71	50 347	11958428	10262 774	197722 785	755365	4333294 13	41 18 6	330705	8935770	13851	292225 29	88 271	340736	8653850	13817

STATE	1940				1941				GRAND TOTALS 1918 - 1941 INCL						
	Acres	No Ribes Wild	Cult	Per Acre Total Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Total Cost Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Total Cost Ribes	
MAINE	19,274	897,608	662	28,486.78	74.333	22,587	399,868	103	12,390.55	53,177	2,342,507	45,412,714	137,192	6,861,937.18	29.194
N. H.	19,171	1,944,638	635	19,171.19	89.310	12,786	1,959,313	2,905	8,125.61	64,156	3,168,345	56,246,685	152,644	8,571,663.93	29.178
VT.	23,905	741,359	310	22,758.99	93.310	18,097	406,550	182	16,639.62	92,225	476,620	11,532,021	131,166	3,411,194.93	12.242
MASS.	29,819	643,103	311	17,642.36	48.48	7,974	41,349	71	2,544.36	32,512	2,023,154	16,514,380	257,909	3,964,627.26	20.082
R. I.	1,547	177	-	1,131.32	5.02	62	2,976	-	86.50	1,407	48,013	253,081	15,569	52,867.28	16.086
CONN.	15,362	121,976	24	5,906.13	25.78	-	-	-	-	-	43,288	2,466,405	29,317	121,028.21	27.566
N. Y.	154,530	1,522,208	2,457	7,648.55	53.198	112,662	1,369,147	1,915	44,663.49	40,121	2,456,597	61,129,163	162,778	1,980,975.58	61.249
N. J.	-	-	-	-	-	-	-	-	-	-	16,742	47,780	1,713	5,284.35	32.299
PENNA.	51,581	1,817,837	4,958	9,996.09	101.352	34,079	782,829	1,532	30,032.39	88,250	587,174	32,419,956	50,716	7,607,365	124.553
ALL STATES	336,344	7,569,604	9,047	217,323.39	65.225	208,247	3,201,032	6,504	114,464.62	55,154	11,842,556	226,083,043	781,204	3,212,754.65	44.191







Table 95-SUMMARY OF RIBES RE-ERADICATION WORK IN NORTHEASTERN STATES - ALL YEARS

INCLUDES ALL RIBES ERADICATION WORK PERFORMED UNDER ALL PROGRAMS. HOWEVER, BLACK CURRANT ELIMINATION AND NURSERY SANITATION PROJECTS SINCE 1929 ARE EXCLUDED

STATE	1923				1924				1925				1926				1927			
	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost
MAINE	20	284	-	360	29.14	1240	17,608	-	359.60	29.14	644	9,145	-	186.76	29.14	728	54,199	10	364.59	51.74
N. H.	430	6,603	-	4,682	11.13	6,668	73,168	48	990.79	15.11	24,008	113,221	406	2,916.61	11.47	32,046	199,488	677	4,406.89	14.50
V.T.	1,240	6,524	-	4,178	3.41	974	4,967	-	328.24	3.41	1,396	7,120	-	470.45	3.41	5,850	29,835	-	1,971.45	3.41
MASS.	16,943	29,414	-	1,609.59	10.15	1,311	1,966	-	124.55	10.15	4,256	6,384	-	404.32	10.15	6,145	9,218	-	383.78	10.15
R. I.	3,240	1,264	-	194.40	0.64	5,000	2,350	-	210.00	0.64	-	-	-	-	-	2,670	1,197	-	280.00	0.93
CONN.	-	-	-	-	-	-	-	-	-	-	2,371	2,050	-	505.27	38.09	570	7,669	12	266.76	50.13
N. Y.	-	-	-	-	-	-	-	-	-	-	1,326	1,420	-	465.98	3.51	1,079	1,499	-	77.66	0.71
ALL STATES	21,875	39,809	-	2,274.49	10.18	15,193	102,059	48	2,013.18	13.67	34,001	139,340	410	4,945.59	15.41	49,088	263,105	699	7,941.13	16.54

STATE	1928				1929				1930				1931				1932			
	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost
MAINE	708	18,558	-	180.30	26.26	232	34,771	-	234.60	10.14	810	27,570	216	578.95	72.34	2,165	70,096	134	1,395.09	64.32
N. H.	83,201	261,126	1,144	3,272.61	11.31	9,425	236,445	466	9,648.02	10.25	6,733	33,080	5	829.27	12.49	21,357	130,583	200	3,649.78	17.61
V.T.	2,292	11,410	52	866.07	38.50	3,005	22,786	56	1,249.60	42.76	5,877	20,372	25	1,660.26	28.33	3,555	10,287	3	960.77	28.29
MASS.	15,875	25,457	7	1,249.81	08.16	20,961	16,194	655	2,650.67	13.08	28,108	27,995	83	2,825.55	10.10	85,714	136,036	2,388	6,624.90	08.16
R. I.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CONN.	1,124	24,973	75	1,286.50	11.14	2,222	7,283	1,431	905.80	15.12	2,542	10,829	455	1,227.67	52.46	4,540	85,051	-	4,003.85	88.18
N. Y.	10,395	216,828	824	5,035.30	48.20	9,291	78,453	668	6,543.17	70.84	8,527	95,691	169	3,014.16	36.11	5,205	18,706	67	1,331.05	26.36
PENNA.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,408	39,384	-	1,047.33	74.28
ALL STATES	113,595	558,312	2,102	17,890.59	16.49	136,117	395,912	3,296	21,239.86	16.29	52,197	215,737	953	10,135.86	19.41	123,924	490,143	2,792	19,034.77	15.40

STATE	1933				1934				1935				1936				1937			
	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost
MAINE	23,047	365,439	68	6,900.38	30.15	28,823	290,762	28	7,711.38	27.10	64,166	1,083,168	446	37,661.57	59.16	203,794	4,377,479	9,099	110,753.86	54.21
N. H.	21,453	371,195	5	8,232.92	38.26	10,967	388,588	-	48,151.13	44.35	57,413	1,438,645	149	37,897.88	66.23	166,947	3,797,938	1,195	99,733.46	60.22
V.T.	9,939	90,521	3	7,197.26	72.91	12,690	250,508	-	10,762.31	85.20	22,633	254,089	110	16,700.46	74.11	27,315	720,273	469	27,455.54	101.26
MASS.	83,104	530,385	2821	14,218.90	17.40	110,419	256,113	1,499	14,413.42	13.23	66,914	627,044	2739	43,140.86	65.94	68,175	1,112,632	3,029	60,448.00	89.16
R. I.	5,255	3,459	86	4,453.55	85.07	4,1726	74,730	952	13,297.35	32.18	72,260	93,682	3,147	28,834.74	40.13	92,245	85,172	4,521	30,979.23	34.09
CONN.	42,513	308,299	109	16,628.59	39.71	36,937	782,593	74	24,768.31	66.21	54,233	781,670	2,606	36,659.22	65.15	36,705	319,611	854	31,388.66	86.14
N. Y.	65,950	1,268,914	283	41,450.32	63.19	81,068	619,259	4,726	37,950.22	46.76	79,504	1,147,014	790	43,818.94	59.14	113,220	2,328,262	2,446	97,461.89	85.20
N. J.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PENNA.	24,871	991,852	31	29,477.37	119.39	28,155	1,029,235	62	42,690.37	132.36	21,790	703,755	1,185	53,262.88	153.32	26,674	1,262,042	688	44,272.64	166.47
ALL STATES	275,710	5,922,064	3,426	128,539.27	47.14	351,185	3,699,788	6,921	156,408.49	45.10	440,913	6,109,067	11,172	271,976.55	63.13	736,073	14,203,609	22,061	502,493.28	68.19

STATE	SUB-TOTALS 1923-1937 INCLUSIVE				1938				1939				1940						
	Acres Re-examined	No Ribes		Per Acre	Total	Acres Re-examined	No Ribes		Total	Acres Re-examined	No Ribes		Total	Acres Re-examined	No Ribes		Total		
	As Reported	As Adjusted	Wild	Cult	Cost	Per Ribes	Wild	Cult	Cost	Per Ribes	Wild	Cult	Cost	Per Ribes	Wild	Cult	Cost		
MAINE	432,665	432,665	8,070,337	11,702	210,897.60	45	18,7	87,836	1,319,791	1,270	49,846.28	57	15,0	32,051	946,758	659	31,972.85	61	18,2
N. H.	684,828	684,828	8,853,557	4,938	228,000.79	33	12,9	49,806	764,073	272	26,826.34	94	15,1	34,847	937,496	111	30,716.30	56	12,3
V.T.	119,372	105,812	1,670,968	1,554	82,864.49	78	15,8	20,248	454,891	315	16,185.61	80	22,9	9,337	387,155	138	8,397.72	89	41,5
MASS	715,034	713,034	3,540,888	16,284	187,644.13	26	5,0	86,975	741,597	3,101	43,847.11	51	8,6	70,750	717,798	1,593	35,414.20	30	10,1
R. I.	258,857	258,857	313,704	8,375	90,807.28	35	1,2	11,346	13,364	1,374	5,361.69	47	1,7	658	1,012	32	597.48	91	1,5
CONN	258,026	258,026	2,970,020	7,968	150,159.45	66	13,2	56,486	644,796	1,163	38,587.02	68	11,4	34,567	452,522	521	17,981.01	52	13,1
N. Y.	4,226,08	4,226,08	6,430,095	10,583	267,049.79	65	15,2	77,305	612,218	668	37,766.99	49	7,9	104,517	1,011,307	707	67,620.21	63	9,7
N. J.	1417	1417	16,956	15	1,631.36	115	12,0	-	-	-	-	-	-	-	-	-	-	-	-
PENNA.	127,678	127,678	4,291,087	2,333	178,526.42	140	33,6	21,262	297,540	67	24,583.41	134	14,0	32,698	433,700	309	37,803.04	116	13,3
ALL STATES	3,018,485	2,972,728	36,157,572	63,772	1,397,577.31	47	12,2	410,864	4,844,010	8,230	246,744.45	61	11,8	359,405	4,887,748	3,670	230,442.81	64	13,6

STATE	1941				GRAND TOTALS 1918-1937, INCLUSIVE			
	Acres Re-examined	No Ribes Wild	No Ribes Cult	Total Cost	Per Acre Cost	Acres Re-examined	No Ribes Wild	No Ribes Cult
MAINE	48,537	656,380	321	26,284.91	54.14	689,479	11,865,432	14,510
N. H.	41,096	417,387	190	24,814.77	60.10	884,956	11,633,921	6,124
V.T.	5,815	50,521	28	4,341.70	75.15	146,249	2,709,708	2,192
MASS.	66,409	708,177	2,032	19,313.38	29.31	950,391	5,556,606	23,276
R. I.	13,271	12,283	197	5,776.63	44.05	309,456	364,382	10,008
CONN.	49,341	600,559	43	4,169.43	83.12	428,821	4,683,397	10,293
N. Y.	125,876	825,250	789	42,982.57	34.66	803,954	9,488,877	13,303
N. J.	-	-	-	-	-	1,417	16,956	15
PENNA.	16,979	210,614	265	20,163.35	119.12	221,033	5,452,427	3,099
ALL STATES	367,325	2,520,711	3,865	147,847.14	40.69	4,475,796	51,811,706	82,822

\* ADJUSTMENTS MADE IN TOTAL ACREAGE FIGURES FOR PERIOD 1918-1937, INCLUSIVE:  
VERMONT - 13,560 ACRES DEDUCTED FROM TOTAL OF YEARLY ACREAGES REPORTED UP TO 1937, INCLUSIVE. THESE 13,560 ACRES WERE ERRONEOUSLY REPORTED AS REWORKED  
CONNECTICUT - 32,197 ACRES DEDUCTED FROM TOTAL OF YEARLY ACREAGES REPORTED UP TO 1937, INCLUSIVE. THESE 32,197 ACRES WERE ERRONEOUSLY REPORTED AS REWORKED







Table 96 -

# SUMMARY OF RIBES ERADICATION WORK IN NORTHEASTERN STATES - ALL YEARS

## INITIAL AND RE-ERADICATION WORK

(INCLUDES ALL RIBES ERADICATION WORK PERFORMED UNDER ALL PROGRAMS. HOWEVER, ALL BLACK CURRANT ELIMINATION AND NURSERY SANITATION PROJECTS SINCE 1929 ARE EXCLUDED)

STATE	1918				1919				1920				1921				1922				1923									
	Acres	Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	Wild	Cult	Total Cost	Per Acre Cost/Ribes					
MAINE	4 910	91 862	235	5 179 23	105 18 7	9 216	353 775	-	6 136 10	67 362	10 283	176 788	636	4 994 05	49 17 2	156 221	56 304	708	3 398 76	32 10 2	190 209	449 287	3 688	8 012 48	04 23	336 452	1 209 282	12 095	9 335 16	26 36
N. H.	66 292	959 315	8 427	26 089 05	39 14 5	163 413	1 639 936	2 1171	35 371 86	22 10 2	203 373	2 061 996	22 206	3 703 86	18 10 1	137 827	1 634 443	9 715	22 640 93	16 12 0	170 489	1816 029	3 061	28 706 64	16 10 2	268 237	3 496 733	24 779	51 631 48	19 133
V. T.	4 698	78 563	77	5 102 64	110 16 6	2 460	96 749	-	2 214 26	90 58 5	4 301	36 294	74	3 991 60	75 8 1	6 319	60 537	131	3 664 01	55 9 6	13 312	201 906	812	61 502 24	46 15 0	23 190	278 570	1234	84 988 43	34 110
MASS.	18 706	356 067	1 919	15 805 31	84 19 0	108 49	201 882	2 374	81 56 18	75 18 6	19 389	1 224 306	14 21	10 422 87	54 63 1	32 933	632 616	4 631	10 290 54	31 19 2	64 302	1 578 294	2 368	13 375 09	21 24 5	201 931	1 776 107	14 887	28 411 92	14 78
R. I.	12 715	13 927	492	3 527 97	28 1 1	40 411	45 320	1 657	5 609 74	14 1 1	23 164	5 973	1 550	3 796 92	16 3	26 971	16 022	582	3 826 92	14 6	11 500	11 764	132	18 400 00	16 10	31 508	14 273	14 64	18 955 96	06 05
CONN.	800	10 000	-	47 400 00	50 12 5	2 500	31 000	-	2 323 34	93 12 4	2 170	42 793	2	1 974 70	91 19 7	8 000	41 470	6	2 664 07	33 5 2	6 175	157 501	-	4 651 50	75 22 8	14 062	288 333	248	60 531 4	49 205
N. Y.	29 337	904 153	11 000	45 679 16	148 30 8	23 194	2 181 286	2 675	73 699 08	343 94 0	7438	753 790	47	32 043 94	431 101 3	14 183	1 275 709	21	46 000 73	3 29 895	110 30	634 231	-	34 082 70	309 593	15 459	906 617	367	44 229 78	287 313
ALL STATES	137 458	2 415 887	22 150	99 863 40	73 17 6	252 043	4 549 948	27 877	139 500 56	55 18 1	270 318	4 301 940	25 936	93 662 74	35 15 9	382 454	3 737 103	15 762	92 885 96	24 98	475 217	4 849 812	16 061	96 818 65	20 10 2	892 639	7 969 917	55 074	160 003 87	16 89

STATE	1924					1925					1926					1927					1928					1929					
	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	
MAINE	401 227	1 846 937	11 599	23 093 91	06 4 6	274 678	1 710 013	15 041	20 257 62	07 6 2	304 437	3 106 579	17 562	21 280 01	07 10 2	261 481	2 601 639	10 225	22 513 71	09 9 9	22 397 90	11 79	234 691	2 184 713	18 244	22 194 38	10 9 2				
N. H.	331 402	4 058 327	14 989	53 590 23	16 12 4	2 617 10	3 293 951	6 402	44 925 60	17 12 6	210 333	3 127 909	4 289	45 606 67	22 14 9	226 019	2 672 166	2 510	41 072 84	18 11 8	228 530	2 302 538	3 220	40 844 96	18 10 1	252 144	2 102 999	6 644	40 609 40	16 8 3	
V. T.	25 888	182 154	592	9 280 08	36 7 1	26 682	317 837	640	9 058 12	34 11 9	22 650	257 743	1 404	10 253 44	45 11 4	19 405	280 781	314	8 233 95	42 14 4	16 767	159 340	196	6 886 57	41 9 5	13 500	110 671	453	64 954 47	49 8 3	
MASS.	197 776	2 025 056	38 777	34 772 98	22 12 6	195 201	751 830	33 610	21 739 45	11 3 8	189 230	1 088 039	25 596	21 281 37	14 3 7	299 353	906 490	32 760	27 940 03	09 3 1	242 933	523 400	34 133	28 769 26	12 2 2	264 840	841 759	32 881	32 486 51	12 3 2	
R. I.	58 480	24 711	2 933	2 302 01	04 5	25 640	4 994	1 928	1 519 04	06 0 2	28 207	17 635	203	1 924 23	07 0 6	77 355	22 279	521	1 700 86	18 2 3	21 461	17 777	613	26 296 64	12 0 8	-	-	-	-	-	
CONN.	17 215	289 034	2 447	5 981 73	35 16 7	16 106	872 797	684	3 495 50	34 16 9	22 237	182 826	330	5 062 35	23 8 2	20 904	152 825	1 208	8 633 20	41 7 3	75 105	123 385	1 364	8 013 84	11 1 6	34 597	134 407	10 922	80 34 54	23 5 9	
N. Y.	23 198	1 061 368	2 501	40 907 02	1 62 4 1	34 937	994 885	1 153	35 787 36	1 02 28 4	38 073	1 077 340	2 087	3 71 129 16	98 28 3	62 953	1 410 646	2 207	43 323 96	72 22 4	95 849	1 957 769	10 235	50 605 43	53 20 4	127 756	1 982 671	6 745	65 466 48	31 15 3	
PENNA.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL STATES	1 012 986	9 527 787	75 658	169 927 90	17 9 4	8 348 094	7 346 289	39 458	138 802 49	17 8 8	813 187	8 838 071	51 471	148 537 83	18 10 9	899 832	8 046 826	49 745	155 618 35	17 8 9	161 347 40	18 7 6	932 787	7 666 890	78 450	179 043 04	19 8 2				

STATE	1930				1931				1932				1933				1934				1935										
	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	
MAINE	197895	2,123,717	10,573	24,042.46	12.107	116,709	1,336,418	4,980	19,824.78	17.116	81,587	1,022,986	4,726	19,266.99	24.123	96,182	2,251,325	4,987	44,037.90	46.234	118,719	4,171,064	23,46	63,549.86	53.351	199,085	6,028,609	3,390	142,930.88	72.303	
N. H.	224,810	2,840,230	3,197	48,596.21	22.126	179,361	3,022,275	4,222	50,246.09	28.169	97,232	1,075,218	1,145	17,647.93	18.111	98,328	4,684,066	757	56,446.82	37.476	86,445	3,868,948	8	52,379.66	61.450	146,731	4,908,291	524	101,152.93	69.333	
V. T.	13,122	94,611	108	5,903.71	45.72	11,660	49,114	132	4,125.07	35.42	11,849	58,776	4,737	3,775.34	32.50	27,219	323,145	228	19,292.47	71.119	32,173	721,748	20	25,274.00	79.224	50,881	732,466	320	39,758.96	78.144	
MASS.	136,791	1,024,371	8,155	18,120.33	13.75	115,529	264,215	6,658	13,116.83	11.23	161,606	334,333	3,071	16,637.41	10.21	97,107	533,773	2,869	19,764.06	20.57	123,132	1,091,090	3,172	25,766.19	21.89	112,331	1,382,212	17,261	71,640.36	64.23	
R. I.	29,595	44,159	3,595	4,241.46	14.15	6,030	110,827	260	4,735.90	78.183	73,337	134,436	1,216	4,592.40	63.183	42,513	300,299	109	16,628.39	39.71	72,587	860,380	1,276	34,088.43	47.119	104,548	1,130,198	6,782	57,232.66	35.109	
CONN.	98,221	1,402,189	4,411	50,150.30	31.143	123,538	1,502,930	5,023	56,764.66	46.122	155,897	1,293,653	6,538	53,486.93	34.83	141,323	1,928,002	3,396	75,083.80	32.136	264,237	6,306,756	12,841	143,634.89	57.239	324,556	7,365,076	3,850	237,677.11	79.233	
N. Y.																															
PENNA.	11,745	63,676	863	8,631.48	74.539	25,424	868,342	703	11,026.51	45.342	22,640	859,086	3,349	7,911.15	35.379	44,870	2,696,646	2,653	51,843.38	116.604	61,339	5,996,426	2,386	99,861.62	163.978	86,669	6,948,081	9,667	144,031.91	166.802	
ALL STATES	712,229	8,066,103	30,962	159,665.95	22.115	578,291	7,174,121	21,978	159,899.84	28.124	344,620	4,786,326	25,091	124,983.41	23.858	552,855	12,750,844	12,693	205,627.82	52.231	813,073	23,133,684	23,944	464,548.93	37.285	1,125,198	28,820,809	55,612	852,530.17	76.256	

STATE	1936					1937					SUB - TOTALS 1918 - 1937 INCLUSIVE					1938					1939					
	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	Acres	No Ribes Wild	Cult	Total Cost	Per Acre Cost/Ribes	
MAINE	357,436	3,376,831	13,221	23,882,09	65.380	112,399	3,251,278	13,975	69,541.18	62.283	3,666,872	2,648,961	45,125,301	144,605	195,827.47	30.185	115,978	2,763,035	3,018	80,184.17	69.238	89,057	2,363,848	2,431	61,987.34	66.286
N. H.	306,887	4,064,507	3,745	206,316.29	67.386	102,133	2,332,303	1,432	59,421.03	58.246	3,769,956	3,769,956	62,273,180	152,441	1,060,413.36	28.169	81,194	1,761,968	361	48,328.59	60.217	74,719	1,762,652	1,423	49,293.81	66.836
V. T.	113,134	4,994,198	2,385	129,596.94	115.441	48,614	1,287,720	938	33,404.55	73.283	483,844	483,844	10,382,923	14,035	342,309.59	70.211	81,194	1,129,735	1,410	37,568.58	77.232	31,430	1,444,430	446	29,736.65	75.459
MASS.	127,805	1,903,930	3,916	94,391.29	75.149	36,985	856,508	1091	29,592.77	32.156	2,650,129	2,650,129	13,316,280	271,572	551,450.15	21.733	117,774	924,693	4,071	51,051.70	43.779	109,217	1,089,000	2,662	47,826.15	44.100
R. I.	96,442	89,659	4,764	3,591.21	35.009	37,749	53,111	311	14,673.42	39.147	569,811	569,811	528,376	2,717.6	134,641.44	24.009	16,210	43,466	1,374	1,755.17	48.244	3,169	12,306	380	4,979.22	46.200
CONN.	78,974	63,567	5,794	46,323.98	59.085	57,839	212,695	934	23,347.48	40.378	3,121,804.61	3,121,804.61	5,163,132	35,716	231,280.61	41.803	66,717	658,414	2,811	4,326.67	67.599	50,517	588,199	657	27,626.68	47.100
N. Y.	344,857	15,946,283	26,237	32,649.80	86.293	210,947	6,121,640	5,032	104,361.83	67.256	2,349,423	2,349,423	57,228,514	116,426	1,903,594.72	31.244	212,753	3,768,812	5,508	165,024.62	76.177	231,857	3,764,602	8,638	138,443.19	64.162
N. J.	258,5	6,795	199	22,997.07	89.226	1,417	14,956	15	1,631.36	113.287	18,159	18,159	64,756	1,728	6,913.95	36.306	80,214	2,749,657	3,328	103,164.44	125.343	100,175	2,236,925	28,814	103,543.99	104.229
PENNA.	156,256	8,429,377	13,663	24,796.31	159.359	88,559	3,071,039	9,778	111,397.19	126.143	502,763	502,763	2,983,543.5	41,233	686,443.81	137.594	80,214	2,749,657	3,328	103,164.44	125.343	100,175	2,236,925	28,814	103,543.99	104.229
ALL STATES	1,784,378	55,668,747	73,926	190,932,448	85.318	716,722	17,405,250	21,126	329,440.63	74.243	14,616,513	13,599,002	233,860,357	759,737	5,732,871.44	42.172	741,569	13,755,780	22,081	538,598.74	73.186	700,141	13,321,598	19,487	483,840.85	68.193







Table 97 - Ribes Eradication Work Performed on Federal Lands in Northeastern States  
During Period 1924-1941, Inclusive (Regular and C.C.C. Programs).

Project	Type of Erad.	Total Acres Worked	Ribes Pulled		Total Man Days	Cost					Total	Cost Ribes	Per Acre
			Wild	Cult.		C.C.C.	B.P.L.	Forest Service	Park Service	State			
Acadia National Park, Me.	Initial	30,638	803,137	293	11,213	13,468.83	3145.83	-	3345.53	-	34,952.22	1.21	43.4
	Re-Erad.	9,407	55,191	-	3,562	5,033.71	-	-	-	-	5,388.71	.337	6.7
	Total	30,075	858,328	293	14,780	19,456.91	5145.83	-	3345.53	-	39,948.27	1.03	22.8
White Mt. National Forest, Me.	Initial	-	-	-	-	-	-	-	-	-	-	-	-
	Re-Erad.	83	3,754	-	47	-	-	141.25	-	-	141.25	1.66	44.3
	Total	83	3,754	-	47	-	-	141.25	-	-	141.25	1.66	44.3
White Mt. National Forest, N.H.	Initial	8,733	816,274	85	2,873	3,423.74	75.63	1471.63	-	224.13	5,195.10	.555	34.7
	Re-Erad.	3,893	320,324	-	1,869	2,811.47	-	495.20	-	153.50	3,440.17	.537	36.3
	Total	12,626	1,136,598	85	4,742	6,235.21	75.63	1966.83	-	357.61	8,635.27	.600	34.7
White Mt. National Forest, N.H.	Initial	3,733	816,274	85	2,873	3,423.74	75.63	1471.63	-	224.13	5,195.10	.555	34.7
	Re-Erad.	3,973	324,078	-	1,916	2,811.47	-	523.45	-	153.50	3,501.42	.333	34.7
	Total	7,706	1,140,352	85	4,789	6,235.21	75.63	1995.08	-	357.61	8,696.52	.300	34.7
Allagash National Forest, Me.	Initial	4,153	759,375	30	2,230	3,133.92	133.93	507.71	-	-	3,911.16	.377	132.0
	Re-Erad.	1,153	61,061	-	541	640.41	77.29	272.03	-	-	939.73	.259	54.3
	Total	5,306	820,436	30	2,771	3,774.33	211.22	779.74	-	-	4,850.89	.222	151.3
Totals	Initial	36,559	2,635,736	403	13,356	20,063.30	3338.03	1479.33	3345.53	224.13	35,985.03	1.01	73.3
	Re-Erad.	19,537	430,330	-	6,010	9,446.59	71.22	203.61	-	153.50	10,590.89	.540	91.5
	Total	56,096	3,066,066	403	19,366	29,509.89	3409.25	1682.94	3345.53	357.61	46,575.92	.589	94.3

Note: No Ribes eradication work was performed on Federal lands in Northeastern States during 1941.



Summary of Nursery Sanitation Work under All Programs in Northeastern States  
During Period 1930-1941, Inclusive  
By States

State	Type of Bred.	Average Examined	Ribes Pulled		Total Man Days	Local Coop.	State	R.E.&PQ & B.P.I.	P.W.A.	C.C.C.	W.P.A.	S.C.S.	Total	Per Acre	
			Wild	Cult.										Cost	Ribes Days
Maine	Initial	206	103,516	22	163	324.45	198.20	-	-	-	-	-	522.65	2.54	502.5
	Re-Bred	1,529	10,819	-	300	156.180	184.60	-	461.25	129.82	70.16	-	1002.01	.655	7.1
	Total	1,735	114,335	22	463	480.63	382.80	-	461.25	129.82	70.16	-	1524.66	.879	65.9
N.H.	Initial	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Re-Bred	2,762	7,824	1	283	172.23	337.21	-	-	-	458.93	-	938.45	.351	2.8
	Total	2,762	7,824	1	283	172.23	337.21	-	-	-	458.93	-	938.45	.351	2.8
Vt.	Initial	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Re-Bred	2,230	4,839	75	409	-	957.91	-	-	108.00	218.27	-	1284.18	.575	2.2
	Total	2,230	4,839	75	409	-	957.91	-	-	108.00	218.27	-	1284.18	.575	2.2
Mass.	Initial	723	50,369	112	139	140.80	212.79	10.00	195.34	-	-	-	558.93	.773	42.0
	Re-Bred	7,310	19,194	182	1,114	89.20	3,454.27	-	-	-	1495.75	-	5039.22	.609	2.6
	Total	8,033	49,563	294	1,253	230.00	3,667.05	10.00	195.34	-	1495.75	-	5598.15	.697	6.2
R.I.	Initial	1,780	160	565	167	-	343.56	162.87	-	-	46.50	-	552.92	.311	0.1
	Re-Bred	18,152	4,786	184	277	-	769.03	-	150.00	151.13	360.72	-	1430.90	.079	0.3
	Total	19,932	4,946	749	444	-	1,112.59	162.87	150.00	151.13	407.22	-	1983.83	.100	0.2
Conn.	Initial	7,466	15,524	165	297	238.34	411.52	159.92	120.00	65.28	-	-	975.56	.131	2.2
	Re-Bred	54,665	11,348	608	2,426	590.19	3,711.64	745.59	677.80	1185.68	1416.77	-	8327.67	.152	0.2
	Total	62,131	27,872	1053	2,723	828.03	4,123.16	905.51	797.80	1250.96	1416.77	-	9303.23	.150	0.4
N.Y.	Initial	3,735	30,924	665	424	5.60	1,237.75	-	-	-	-	-	95.40	.374	8.3
	Re-Bred	95,651	131,275	1240	3,866	396.17	14,747.83	-	2490.75	255.50	2461.23	123.75	20475.33	.214	1.4
	Total	99,386	162,199	1801	4,290	401.77	16,045.38	-	2490.75	255.50	2461.23	123.75	21074.08	.220	1.4
N.J.	Initial	795	2,000	114	109	-	99.45	-	-	-	-	-	327.45	.412	2.5
	Re-Bred	870	765	-	18	-	76.47	52.04	3.33	-	-	2.25	134.09	.154	0.8
	Total	1,665	2,765	114	127	-	175.92	52.04	3.33	-	-	2.25	461.54	.277	1.7
Penn.	Initial	4,414	38,460	434	343	235.30	617.45	56.80	234.55	-	-	55.30	1209.33	.274	8.7
	Re-Bred	22,711	53,649	71	3978	344.65	3,582.44	45.12	-	4335.19	867.51	-	9174.97	.404	2.4
	Total	27,125	92,109	565	4322	579.95	4,199.87	31.93	264.55	4335.19	867.51	55.30	10354.35	.385	3.4
Total	Initial	19,119	221,953	2127	1642	944.99	3,190.70	349.59	579.22	65.28	46.50	373.70	5545.65	.290	11.6
	Re-Bred	205,784	244,429	2647	14371	1748.67	27,821.50	842.81	3783.13	6165.32	7549.39	126.00	47836.82	.232	1.2
	Total	224,903	466,452	4774	16014	2693.66	31,002.20	1192.40	4363.02	6230.60	7595.89	504.70	53392.47	.237	2.1
Total cost by cooperating agencies						5.0	58.1	2.2	8.2	11.7	13.0	0.9	100.0	-	-

- (1) Total funds - balance of expenditures under heading "Local Cooperation" all individual funds.  
 (2) Includes \$1245.13 W.P.A. funds spent under State W.P.A. Program.  
 (3) Includes \$29.54 W.P.A. & N.G. funds - balance of expenditures under this heading, more from W.P.A. funds.



Table 99 - Summary of Nursery Sanitation Work in Northeastern States  
During Period 1930-1941 Inclusive - By Programs

Program	Type of Erad.	Total Acreage Examined	Ribes Pulled		Total Man Days	Cost			S.C.S.	Total	Cost Ribes			
			Wild	Cult.		Local Coop.	State	BE & PQ and BPI				P.W.A.	C.C.C.	W.P.A.
Regular Coopera- tive	Initial	16,799	189,652	1948	1290 1/2	914.24	2,989.65	349.59	-	-	4253.48	.255		
	Re-Erad	133,942	172,281	2417	7547	1266.42	24,386.13	804.23*	-	-	26456.78	.193		
	Total	150,741	361,933	4360	8837 1/2	2180.66	27,375.78	1153.82	-	-	30710.26	.204		
P.W.A.	Initial	415	25,597	3	147	30.75	7.00	-	579.89	-	617.64	1.49		
	Re-Erad	15,422	14,285	96	1355	-	1,597.41	-	3783.13	-	5380.54	.349		
	Total	15,837	39,882	99	1503	30.75	1,604.41	-	4363.02	-	5998.18	.379		
C.C.C.	Initial	280	232	47	33	-	-	-	-	65.28	65.28	.253		
	Re-Erad	11,592	45,509	14	5699	-	736.30	-	-	6165.32	6901.62	.595		
	Total	11,872	45,741	61	5732	-	736.30	-	-	6230.60	6966.90	.537		
Federal W.P.A.	Initial	590	27	45	9	-	-	-	-	46.50	46.50	.079		
	Re-Erad	29,908	11,543	119	1742	457.10	910.00	9.04	-	6104.21	7480.35	.250		
	Total	30,498	11,570	164	1751	457.10	910.00	9.04	-	6150.71	7526.85	.247		
State W.P.A.	Initial	-	-	-	-	-	-	-	-	-	-	-		
	Re-Erad	2,967	348	-	256	25.15	-	-	-	1245.18	1270.33	.428		
	Total	2,967	348	-	256	25.15	-	-	-	1245.18	1270.33	.428		
S.C.S.	Initial	1,055	6,445	89	163	-	184.05	-	-	-	378.70	562.75		
	Re-Erad	11,953	533	1	71 1/2	-	191.66	29.54*	-	-	126.00	347.20		
	Total	12,988	6,978	90	234 1/2	-	375.71	29.54	-	-	504.70	909.95		
Totals	Initial	19,113	221,953	2127	1642 1/2	944.99	3,180.70	349.59	579.89	65.28	46.50	378.70		
	Re-Erad	205,784	244,499	2647	14671 1/2	1748.67	27,821.50	842.81	3783.13	6165.32	7349.39	126.00		
	Total	224,903	466,452	4774	16314	2693.66	31,002.20	1192.40	4363.02	6250.60	7395.69	504.70		
% of total cost by cooperating agencies						5.0	58.1	2.2	8.2	11.7	13.9	0.9	100.0	-

\* Includes \$170.86 B.E. and P.Q. funds = balance B.P.I. money

\*\* B.E. and P.Q. funds



Table 100 - Nurseries Maintaining Sanitation Zones in the Northeastern States  
December, 1941

State	Nurseries Where Protection Established and Being Maintained				Maximum Acreage of Control Areas	No. Nurseries Protected During 1941	No. White Pines Existing During 1941 in Nurseries Protected That Year
	Number						
	Federal	State	Private	Total			
Maine	-	1	1	2	409	-	-
N. H.	-	1	1	2	749	-	-
Vt.	-	1	-	1	700	-	-
Mass.	-	4	6	10	8,210	-	-
R. I.	-	-	5	5	2,453	4	2,519
Conn.	-	2	5	7	2,077	7	950,000
N. Y.	2	2	-	4	4,737	4	37,000,000
N. J.	-	1	-	1	600	-	-
Del.	1	4	4	9	4,136	6	4,910,000
Total	3	16	22	41	24,571	21	42,862,319

Thirty-eight other nurseries in the Northeastern States established zones, but abandoned them for various reasons.

#### List of Nurseries Maintaining Sanitation Zones in Northeastern States

##### Maine

##### Acreage of Sanitation Zones

Western Maine Nursery - Fryeburg, Maine ..... 247  
State Nursery - Orono, Maine ..... 162  
409

##### New Hampshire

Keene Forestry Associates - Swansey, N.H. .... 250  
State Nursery - Boscowen, N. H. .... 499  
749

##### Vermont

State Nursery - Essex Junction, Vt. .... 700

##### Massachusetts

Massachusetts Dept. of Conservation Nursery - Amherst, Mass. .... 225  
Massachusetts Dept. of Conservation Nursery - Bridgewater, Mass. .... 100  
Massachusetts Dept. of Conservation Nursery - Clinton, Mass. .... 150  
Massachusetts Dept. of Conservation Nursery - Erving, Mass. .... 50  
Franklin Forestry Company - Shelburne Falls, Mass. .... 435  
Kelsey Highlands Nursery - Buxford, Mass. .... 900  
Little Tree Farms Nursery - Framingham, Mass. .... 725  
Wyman Nursery - Framingham, Mass. .... 1,000  
Littlefield-Wyman - No. Abington, Mass. & Bay State Nursery -  
Abington, Mass. .... 4,625  
8,210

##### Rhode Island

Newport Nursery - Middletown, R.I. .... 628  
Rhode Island Nursery - Middletown, R. I. .... 770  
Greenwood Nursery - North Kingston, R.I. .... 365  
Red Oaks Nursery - Scituate, R.I. .... 580  
Groaton Nursery - Providence, R.I. .... 110  
2,453



List of Nurseries Maintaining Sanitation Zones  
in Northeastern States (Continued)

Connecticut

Average of Sanitation Zones

Northeastern Forestry Company, Cheshire, Conn.	587
A. N. Pierson Inc. - Storrs, Conn.	595
Elfgren Nursery - East Killingly, Conn.	580
State Nursery - Larkhamstead, Conn.	558
State Nursery - Tolland, Conn.	500
Sun Valley Nursery - New Milford, Conn.	100
Great Pond Nursery - Simsbury, Conn.	185
	<u>2,007</u>

New York

State Nursery - Saratoga Springs, N. Y.	2,310
State Nursery - Newville, N. Y.	1,257
*State Nursery - Painted Post, N. Y.	605
*State Nursery - Big Flats, N. Y.	605
	<u>4,777</u>

\*Leased by Soil Conservation Service

New Jersey

State Nursery - Washington Crossing, N.J.	500
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Pennsylvania

Clearfield State Nursery - Clearfield, Penna.	570
Greenwood State Nursery - Petersburg, Penna.	411
Mt. Alto State Nursery - Mount Alto, Penna.	303
Rockview State Nursery - Pleasant Gap, Penna.	354
S.C.S. Nursery - Mt. Eagle, Penna.	216
Wilmore Realty Co. Nursery - Windber, Penna.	115
Andorra Nursery - Chester Hill, Penna.	1,088
Fairview Nursery - Fairview, Penna.	569
Doyle Nursery - Seven Stars, Penna.	531
	<u>7,136</u>



Table 101. Special Hibes Nigam Elimination Work Conducted Under All Programs in Northeastern States During Period 1918-1941, Inclusive

By Programs

Program		Regular	P.W.A.	W. P. A.	C.W.A.	E.R.A.	Totals
Properties Inspected		1,032,873	6,157	130,313	195,750	240,355	1,705,438
Catches Located		14,227	39	869	5,404	25,853	46,397
No. Days Employed	Nigam	85,624	7,486	3,153	-	7,110	103,373
	Other Cult	20,550	-	432	-	23,701	44,683
	Total	106,174	7,486	3,585	-	30,811	148,059
Total Man Days		14,155	575	1,081	1,850	11,075	29,136
Cost	Individuals	\$2,351.50	\$777.00	\$496.53	-	-	\$3,625.03
	Towns	-	-	-	-	\$901.00	901.00
	State	59,586.54	52.25	356.52	-	601.66	60,596.97
	B.P.I.	4,422.95	-	-	-	-	4,422.95
	P.W.A.	1,336.06	531.34	-	348.24	654.55	2,970.39
	G.C.C.	-	-	-	-	218.40	218.40
	W.P.A.	-	-	4,503.45	-	-	4,503.45
	C.W.A.	-	-	-	8,626.21	-	8,626.21
	E.R.A.	-	-	-	-	59,568.50	59,568.50
	Total	37,727.35	1,410.79	5,361.47	8,974.45	61,944.11	145,418.17
Total		46.5	1.0	3.7	6.2	42.0	100.0

C.W.A. project consisted of location work only.



Table 102      Special Ribes Nigrum Elimination Work in Northeastern States, 1928-1941, Inclusive.

By States

State		Mass.	R.I.	Conn.	N.Y.	Totals
No. Properties Inspected		750,359	110,137	318,344	528,556	1,707,496
No. Patches Located		6,657	1,917	8,456 <sup>(2)</sup>	5,123	21,153
No. Ribes Pulled	Nigrum	42,629 <sup>(1)</sup>	16,219	7,464	37,064	103,376
	Other Cult.	432	1,093	48,387	731	50,643
	Total	43,061	17,312	49,331	37,795	158,409
Total Man Days		7,347	1,029	14,610	5,250	28,236
Cost	Indiv.	\$3,625.30	"	"	"	\$3,625.30
	Towns	"	"	\$901.00	"	\$901.00
	State	20,740.41	\$9,178.55	3,110.33	27,547.02	\$60,576.91
	B.P.I.	100.00	675.53	3,647.42	"	4,422.95
	P.W.A.	550.04	475.80	1,916.05	51.50	2,993.39
	C.C.C.	"	"	218.40	"	218.40
	W.P.A.	4,325.85	"	"	122.36	4,508.21
	C.W.A.	2,328.11	"	8,338.10	"	10,666.21
	E.R.A.	"	"	29,500.50	"	29,500.50
	Total	\$2,029.71	\$10,327.88	\$35,281.46	\$27,161.12	\$74,799.17
% of Total		22.0	7.1	51.8	19.1	100.0

(1) Includes 556 bushes pulled in connection with special black current elimination project around nurseries in 1925 and 1926 at a cost of \$367.89 to the state.

(2) The survey in Connecticut included all cultivated ribes. It is estimated that the number of black current patches in that state did not exceed 1,000.

Table 103 - Status of Ribes Nigrum Elimination Work in Northeastern States December 31, 1941

State	Years Work Performed	Total Number Townships In State	No. Townships Where Black Current Elimination Work	
			Completed	Partially Completed
Mass.	1930-1940, Incl.	355	346*	"
R.I.	1929-1933, Incl.	39	39	"
Conn.	1930-1935, Incl.	169	169	"
N.Y.	1928-1940, Incl.	996	236	39
Totals	-	1,559	790	39

\* Nine additional townships on the islands adjacent to the mainland will not be worked.

In conjunction with the regular control activities in the other states, such bushes have been eradicated in the worked portions of the control areas. Few Ribes nigrum have been found in those latter states.



Table 104 - Blister Rust Canker Elimination Work Under All Programs  
in Northeastern States, 1918-1941, Inclusive.

By States

State		Maine	N.H.	Vt.	Mass.	N.Y.	Penna.	Totals
Period work performed		1932-41	1937	1935-41	1933-41	1935-41	1934-40	1932-41
Tot. No. pines examined		156,009	28,581	245,381	4,764,167	1,577,875	919,478	7,691,491
No. fatally inf. pines cut down		11,224	5,731	39,754	32,259	149,379	32,595	270,942
No. pines from which cankers removed		21,683	638	20,502	16,466	190,702	129,975	379,966
No. cankers removed	Branch	46,566	711	23,780	21,618	253,287	566,925	912,887
	Stem	4,614	-	446	7	1,789	1,974	8,830
Total man days		2,988	219	2,648	8,702	12,420	7,306	34,283
Cost	Individuals	2,425.36	-	458.52	-	240.00	-	3,123.88
	Towns	-	-	463.00	3,416.25	-	-	3,879.25
	State	31.65	-	71.05	67.98	2,169.96	-	2,340.64
	Park Service	321.04	-	-	-	-	-	321.04
	C.C.C.	3,922.90	-	-	-	-	8,203.90	12,125.99
	W.P.A.	-	779.37	7,766.29	9,843.52	48,456.16	10,959.91	77,805.25
	C.W.A.	-	-	-	24,255.74	-	-	24,255.74
	Total	6,700.95	779.37	8,758.86	37,583.49	50,866.12	19,163.00	123,851.79
% of Total Cost		5.4	0.6	7.1	30.3	41.1	15.5	100.0



Table 103 - Blister Rust Canker Elimination Work Under All Programs  
in Northeastern States, 1918-1941, Inclusive.

By Programs

Program		Regular	C.C.C.	W.P.A.	C.W.A.	Total
Period work performed		1932-41	1933-39	1935-41	1933-34	1932-41
Est. No. pines examined		116,640	625,279	2,301,572	4,648,000	7,691,491
No. fatally inf. pines cut down		9,679	31,265	212,695	17,303	270,942
No. pines from which cankers removed		14,468	84,927	267,787	12,784	379,966
No. cankers removed	Branch	22,262	485,509	387,603	17,511	912,885
	Stem	2,146	2,758	3,926	-	8,830
Total man days		968	6,741	21,165	5,409	34,283
Cost	Individuals	2,883.88	-	240.00	-	3,123.88
	Towns	50.00	-	3,829.25	-	3,879.25
	State	48.05	-	2,292.59	-	2,340.64
	Park Service	321.04	-	-	-	321.04
	C.C.C.	-	12,125.99	-	-	12,125.99
	W.P.A.	-	-	77,805.25	-	77,805.25
	C.W.A.	-	-	-	24,255.74	24,255.74
	Total	3,302.97	12,125.99	84,167.09	24,255.74	123,851.79
% of Total Cost		2.7	9.8	67.9	19.6	100.0



Table 106 - Pine and Control Area Mapping Conducted Under A-1 Program  
in Northeastern States During Period 1933-1941, Inclusive.

## By States

Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Man Days	Cost				B.R.A. & C.W.A.	B.E. %	Total
				Towns and Counties	State	C.C.C.	P.W.A.	W.P.A.		
2,226,142	4,659,932	1,808 $\frac{1}{2}$	36,085		3,135.35	16,956.86	6,533.14	132,605.94	17.60	159,105.04
1,416,138	250,649		37,933	443.11	1,523.70	11,169.93	9,443.25	140,573.03	18.17	169,579.21
1,624,412	3,966,000		22,305	2,190.04	1,234.47	4,800.57	1,946.18	76,251.43	-	84,426.11
868,933	1,080,383	1	19,363	2,415.17	1,708.41	-	2,893.14	73,043.91	3.112.20	41.76
225,660	-	-	2,204	-	820.25	7,678.26	2,009.23	3,243.30	-	2,248.10
728,888	2,011,313	3,224	42,166	0,850.73	1,325.48	627.60	568.10	496,806.50	22,211.70	420.29
4,162,145	2,784,054	2,399	42,065	-	32,365.88	2,563.43	14,559.60	147,959.42	-	25.11
773,115	-	6,997	43,939	-	-	101,655.59	1,236.87	65,602.68	-	4.00
12,028,436	15,352,400	16,453 $\frac{1}{2}$	228,660	10,977.94	42,113.32	145,475.35	39,229.56	738,186.12	25,625.95	523.62

\*Includes \$82,172.99 P.W.A. funds spent on special state project.

\*\*Includes considerable acreage of woodland spot-mapping.

## By Programs

Acreage Mapped	Acreage Examined But Not Mapped	Miles Boundary Lines Painted	Man Days	Cost							Total
				Towns and Counties	State	C.C.C.	P.W.A.	W.P.A.	F.N.A. & C.W.A.	B.E. %	
441,593	580,005	-	2,412	-	11,345.09	-	-	-	-	11,345.09	
999,838	364,002	2,630	36,265	-	189.59	145,475.35	-	-	-	145,662.94	
744,663	942,528	227	6,915	-	1,025.38	-	39,229.56	-	-	40,254.94	
9,239,070	11,177,457	10,678 $\frac{1}{2}$	159,244	5,622.15	28,382.78	-	-	656,013.13	-	526.92	
213,971	2,139,370	-	4,205	-	-	-	-	-	22,211.70	-	
45,761	34,138	-	892	-	-	-	-	-	3,112.33	-	
343,538	114,900	2,918 $\frac{1}{2}$	17,027	5,355.79	670.73	-	-	82,172.99	-	88,199.86	
12,028,436	15,352,400	16,453 $\frac{1}{2}$	228,660	10,977.94	42,113.32	145,475.35	39,229.56	738,186.12	25,625.95	526.92	
										1,001,831.00	



Due to complications in data available at Cambridge Office, Table 107 and map showing status of pre-eradication survey work will be submitted at later date.



Table 108 - State Compensation Paid for Cultivated Ribes Destroyed  
Under All Programs in Northeastern States  
1918-1941, Inclusive

State	Total No. Cultivated Ribes Destroyed	No. Bushes Paid For	% Bushes Paid For	No. Persons Paid Compensation	Amount Paid in Reimbursement	Ave. Amount Paid For Bush
Maine	151,724	-	-	-	-	-
N. H.	158,769	2,008	1.3	63	\$550.60	\$.274
Vt.	17,453	1,646	9.4	133	792.91	.462
Mass.	324,540	42,074	13.0	673	15,020.15	.357
R. I.	41,758	1,410	3.4	58	509.79	.362
Conn.	90,524	175	0.2	16	103.50	.591
N. Y.	175,809	16,838	9.3	1,151	8,587.99	.542
N. J.	1,842	-	-	-	-	-
Penna.	54,440	382	0.7	59	157.45	.412
Totals	1,016,359	64,033	6.3	2,183	\$22,722.39	\$.355

The Vermont data include \$86.25 compensation paid by individual cooperators in 1926 and 1933 to ten owners of cultivated Ribes for the removal of 181 bushes.

The Massachusetts data include \$5,685.05 paid in 1918 to 253 persons for 16,517 bushes destroyed in 1917 and 1918, mostly in 1917. It is impossible to separate the 1917 data.

The Connecticut data include \$76.25 paid in 1930 by individual cooperators (nurserymen) to 12 owners of cultivated Ribes for the removal of 114 bushes.

The Pennsylvania data represent payments made by individual cooperators (nurserymen) during 1936, 1937 and 1941.

No federal money has been paid for Ribes compensation.



Table 109 - Total Cost of All Cooperative Blister Rust Control Activities, By Projects, in The Northeastern States During Period 1918-1941, Inclusive.

State	Supervision and BRC Agent Activities	Ribes Eradication	Eradication Assistants and Checkers	Black Currant Elimination	Nursery Sanitation	Ribes Compensation	Blister Rust Canker Elimination	Prunus Erad. Surveys	Field Data and Misc.	Total
Ala.	338,614.73	1,047,161.52	113,030.05	-	11,024.66	-	6,700.55	159,153.87	27,977.31	1,765,662.00
Ariz.	569,046.75	1,238,422.37	94,467.96	-	968.45	550.60	779.37	163,570.24	63,141.49	2,135,947.11
Cal.	225,012.87	457,766.47	32,639.34	-	1,284.18	792.91	8,758.86	86,423.34	36,705.68	849,383.13
Conn.	418,850.38	707,772.50	22,451.81	32,029.71	6,115.00	15,020.15	57,585.49	85,217.56	53,840.19	1,578,082.00
Del.	69,089.58	167,259.18	26,400.61	10,327.83	1,233.83	509.79	-	13,948.15	9,510.25	294,829.11
Ill.	161,280.95	354,225.39	72,215.27	75,289.46	9,303.23	103.50	-	127,690.26	131,679.05	832,581.11
Iowa	527,804.74	2,434,771.76	355,830.62	27,761.12	21,874.03	5,587.99	50,866.12	197,298.50	333,846.13	4,075,141.00
La.	22,697.12	6,915.69	1,952.08	-	685.90	-	-	-	4,550.00	37,016.81
Mass.	177,974.06	1,024,723.34	178,349.26	-	10,334.35	157.45	19,163.00	168,529.14	32,927.64	1,812,206.00
Total	2,891,271.13	7,439,018.52	897,317.80	145,418.17	63,621.68	22,722.39	123,851.79	1,001,331.30	696,987.11	15,082,040.00
Total	20.6	56.9	6.8	1.1	0.6	0.2	0.9	7.7	5.3	100.0

- (1) Includes \$9,500.00 (charge of \$500.00 per year) for nursery inspection work from 1918-1936, inclusive.
- (2) Includes \$514.65 for special nursery inspection work during 1935-1934.
- (3) Includes \$244.56 for special nursery inspection work during 1932.



Table 110 - Total Cost of All Cooperative Blister Rust Control Activities  
in The Northeastern States during The Period 1918-1941, inclusive

State		Maine	N. H.	Vt.	Mass.	R. I.	Conn.	N. Y.	N. J.	Penn.	All States
State Funds	State Appropriations	146,919.93	503,447.35	61,033.78	304,065.50	69,962.61	146,967.12	1,286,075.22	16,828.15	114,295.86	2,449,535.54
	Towns	129,143.38	429,284.12	23,413.59	20,543.36	-	26,824.80	360.40	-	-	629,569.35
	Individuals	85,249.38	49,203.57	73,860.88	101,080.72	581.36	9,596.49	174,256.74	-	2,193.68	495,022.52
	Counties	-	1,724.03	-	-	-	-	42,219.84	-	-	43,943.92
	Total State Funds	361,312.69	782,659.12	158,508.25	425,689.58	70,543.97	183,568.41	1,502,512.20	16,828.15	116,489.55	3,618,131.93
Federal Funds	B.P.I.	249,874.54	434,415.50	119,396.94	323,303.88	43,883.83	103,065.16	479,769.34	6,271.28	31,319.21	1,791,601.69
	B.E. & P.O.	55,145.95	64,075.46	41,452.81	62,460.53	4,467.67	28,995.16	72,852.74	2,949.64	44,064.19	387,476.16
	Park & Forest Services	10,446.69	2,442.11	-	-	-	-	-	-	779.77	13,668.57
	Sub-Total	326,467.18	500,934.07	160,861.77	385,764.41	48,351.50	132,061.31	552,622.08	9,220.92	76,453.17	2,192,746.41
	C.C.C.	355,093.93	149,340.77	95,905.47	64,603.64	111,809.98	177,053.95	774,782.95	346.50	634,435.67	2,623,822.97
	P.W.A.	69,128.95	68,597.21	83,168.20	55,071.89	12,427.96	22,479.39	92,334.23	3,081.48	45,474.63	397,765.92
	W.P.A. State Program	-	-	-	1,339.18	-	232,690.94	324.90	-	9,400.00	243,654.92
	W.P.A. Federal Program	649,723.54	637,416.06	402,140.26	407,458.40	48,258.53	83,157.99	1,132,155.95	7,303.37	455,806.49	3,818,426.71
	C.W.A.	-	-	-	31,134.08	-	5,938.10	-	-	-	37,072.18
	H.R.A.	1,495.80	-	-	10,996.20	-	94,478.40	2,779.70	-	-	109,687.10
Emergency Funds	A.R.A.	-	-	-	-	1,640.00	1,152.71	8,010.58	-	4,254.65	15,057.94
	S.C.S.	-	-	-	-	5,797.19	-	9,050.87	230.25	9,613.27	24,691.58
	N.Y.A. & N.V.S.	-	-	-	-	-	-	757.60	-	220.20	988.40
	Sub-Total	1,075,883.22	850,354.04	530,213.93	567,405.29	179,933.80	616,947.59	2,080,205.76	10,961.60	1,419,255.51	7,271,161.69
	Total Federal Funds	1,402,350.40	1,351,298.11	691,075.70	953,163.90	223,235.30	749,008.70	2,572,828.86	20,182.52	1,495,718.68	9,453,908.07
Grand Total		1,753,663.09	2,133,947.23	849,583.95	1,378,853.38	293,829.27	932,577.11	4,075,741.06	37,010.67	1,612,208.24	13,032,040.00
Percentage of Total		13.5	16.3	6.5	10.5	2.3	7.1	31.2	0.3	12.3	100.0

\* Includes expenditures for district leaders' salaries and other non-labor costs paid from Cambridge office W.P.A. Administrative allotments as follows:- Maine - \$693.32; New Hampshire - \$131.17; Vermont - \$758.31; Massachusetts - \$1,774.36; Rhode Island - \$169.44; Pennsylvania - \$199.83; Total - \$3,726.43.



ANNUAL REPORT  
on  
WHITE PINE BLISTER RUST CONTROL  
SOUTHERN APPALACHIAN STATES  
1941

By Roy G. Pierce,  
Pathologist in Charge,  
August 1, 1942.







# TABLE OF CONTENTS

	<u>Page</u>
ACCIDENTS	
Personnel.....	B-4
Trucks (none).....	B-4
BLACK CURRANT ERADICATION	
By States.....	A-8
BLISTER RUST	
Control	
Location of activity by state, county and project.....	B-5
On National Forests.....	5
On National Parks.....	1
On State and private lands.....	9
Infections	
In George Washington National Forest.....	E-1 to 8 & HA-8 & 10
In National Forests of Virginia and West Virginia.....	7
In Shenandoah National Park.....	4
CANKER ELIMINATION	
Costs - 1918-1941.....	A-10
Costs - 1941.....	A-4
In George Washington National Forest.....	HA-8
In Maryland.....	10, A-9
In 1941.....	A-3, A-4, J-1
In Shenandoah National Park.....	3
In Virginia.....	11, A-3, A-4, A-9
On State and private lands.....	10, 11
CHECKING.....	G-1 to G-3
COOPERATION	
Expenditures in 1941 for State and private cooperation.....	C-1
Expenditures in 1941 under Lea Act.....	A-11
Graph showing financial cooperation by different agencies.....	C-3.1
State cooperation	
Georgia.....	L-1
Maryland.....	L-1
North Carolina.....	L-1
Tennessee.....	L-1
Virginia.....	L-1
West Virginia.....	L-2
EXPENDITURES	
Blister rust control expenditures, by states, for 1941.....	A-4
Blister rust control expenditures, by states, for 1918-1941....	A-9, A-10
Canker elimination costs, Shenandoah National Park.....	3
Canker elimination costs, State and private lands.....	10
In Maryland.....	10
In Virginia.....	11
CCC and SCS expenditures by states and years.....	C-6
Comparison of expenditures for years 1937-1941.....	C-2
Eradication costs on National Forests 1918-1941.....	7
Eradication costs on National Parks 1933-1941.....	4



## EXPENDITURES (Continued)

Federal expenditures for region.....	C-1
Forest Service expenditures.....	A-4 & A-10
Graph showing total expenditures, 1941, by activity.....	C-3
Graph showing total expenditures, 1941, by project.....	C-3.1
Graph showing total expenditures, 1941, by states.....	C-9
Interior Department expenditures.....	A-4 & A-10
Nursery Sanitation.....	A-4 & A-10
Regional Office expenditures.....	C-8
Regular appropriation expenditures, by states.....	C-5
State and private expenditures for region.....	C-1
Statistical Tables for 1918-1941.....	A-9 & A-10
Statistical Tables for 1941.....	A-4
WPA Expenditures by state and appropriation	
Calendar year 1941.....	C-4
Federal Project.....	A-4, C-7
State Project.....	A-4

## FIELD STUDIES

Other field studies and observations.....	D-11
Pine infection studies.....	D-8
Maryland.....	D-9
Virginia.....	D-9
Ribes Regeneration	
Location of plots.....	D-1
Location of plots - Map.....	D-2.1
Maryland.....	D-4
North Carolina.....	D-5
Tennessee.....	D-5
Virginia.....	D-5
West Virginia.....	D-6
Use of chemicals on ribes crowns.....	D-6 to D-8

## GRAPHS

Showing acreage worked, by ownership and project.....	H-7, H-8
Showing ribes, wild and cultivated, destroyed.....	H-4, H-5
Showing total expenditures in 1941	
By activity.....	C-3
By project.....	C-3.1
By State.....	C-9

INFECTION CONDITIONS IN 1941.....	E-1
In Maryland.....	E-7
In North Carolina.....	E-7
In Tennessee.....	E-7
In Virginia.....	E-4
In West Virginia.....	E-6
Map of region showing location of rust and spread in 1941.....	E-2.1
On State and private lands.....	11
On the Blue Ridge Parkway in North Carolina.....	2
On the George Washington National Forest.....	HA-8, 10
On the Monongahela National Forest.....	HA-13
On the National Forests.....	7
On the Shenandoah National Park.....	4
Spread of rust in region in 1941.....	E-1
Table giving report on inspection for blister rust in four states	E-3



## INFORMATIONAL ACTIVITIES

Lectures.....	F-1
Publications.....	F-2
Table giving activities by states.....	F-1
Technical memoranda, list of.....	F-2

## LOCAL CONTROL

By ownership.....	H-6
Indian Reservations.....	1, A-11
National Forests.....	5, A-5,6,11,14 & HA-1 to 21
National Parks.....	1, A-5,11,12
State and private lands.....	9, A-5,11,13
By projects	
From 1918 to 1941.....	H-3
In 1941.....	H-1
By States	
Georgia.....	H-11
Maryland.....	H-11
North Carolina.....	H-12
Tennessee.....	H-13
Virginia.....	H-13
West Virginia.....	H-14
By Working.....	H-6
Cost	
1918-1941 for National Forests.....	7
1918-1941 for all lands.....	A-10
1941.....	A-4
1941, by project, working and ownership.....	H-9
Per acre by state, year and working.....	H-10
Graph showing acreage worked	
By ownership.....	H-8
By project.....	H-7
Graph showing cultivated ribes pulled, by states.....	H-5
Graph showing wild ribes pulled, by states.....	H-4
Productivity ratings, by states, 1939 to 1941.....	H-10.1

## MAPS

Showing distribution of blister rust.....	E-2.1
Showing location of ribes regeneration plots.....	D-2.1

## NATIONAL FORESTS

Infections in 1941 in George Washington National Forest.....	E-5, E-6
Narrative Section	
Chattahoochee - Georgia.....	HA-20
Cherokee - Tennessee.....	HA-15
Cumberland - Kentucky.....	HA-1
George Washington - Virginia.....	HA-6
George Washington - West Virginia.....	HA-9
Jefferson - Virginia.....	HA-3
Monongahela - West Virginia.....	HA-11
Pisgah - North Carolina.....	HA-18
Sumter - South Carolina.....	A-15



## NATIONAL FORESTS (Continued)

### Statistical Section

Ribes Eradication Data for 1918-1941.....	A-12, 14, 15
Ribes Eradication Data for 1941.....	A-5, A-6

## NATIONAL PARKS

Canker Elimination in Shenandoah National Park.....	3
Infection conditions in Shenandoah National Park.....	E-5

### Narrative Section

Blue Ridge Parkway.....	2
Great Smoky Mountains National Park.....	1
Shenandoah National Park.....	2

### Statistical Section

Ribes Eradication Data for 1918-1941.....	A-11, 12
Ribes Eradication Data for 1941.....	A-5, A-6
Summary of Checking on Shenandoah National Park.....	G-2

## NURSERY SANITATION .....

Parsons, West Virginia - U. S. Forest Service.....	I-1
Statistics for 1918 to 1941.....	A-8
Statistics for 1941.....	A-3, A-4

## OMNIBUS TABLES

Tables 1 to 5, for 1941.....	A-1 to 6
Tables 1A to 5A, for all years.....	A-6 to 15

## PERSONNEL

Foremen, by states.....	B-2
Supervisory personnel in 1941.....	B-1

## PLANS FOR THE FUTURE

National Forests in regions 7 and 8.....	8
Chattahoochee.....	HA-21
Cherokee.....	HA-17
George Washington.....	HA-8, 10
Jefferson.....	HA-5
Monongahela.....	HA-14
Pisgah.....	HA-19
Shenandoah National Park.....	5
State and private lands.....	12

## PREERADICATION SURVEY.....

In 1918-1941.....	K-2
In 1941.....	K-1
Survey work remaining to be done.....	K-3

## RIBES

-Bearing and Ribes-free areas in National Forests	6
Chattahoochee (See under <u>White Pine and Ribes</u> ).....	HA-20
Cherokee (See under <u>Ribes</u> ).....	HA-16
Cumberland (See under <u>White Pine</u> ).....	HA-1
George Washington (See under <u>Ribes</u> ).....	HA-9
Jefferson (See Table under <u>White Pines</u> ).....	HA-3
Monongahela (See Table).....	HA-12
Pisgah (See <u>White Pine and Ribes</u> ).....	HA-18



## RIBES (Continued)

-Bearing and Ribes-free areas in National Parks.....	1
-Bearing and Ribes-free areas on State and private lands....	11, 12
Ecology seminars.....	D-11
Infections, new locations.....	E-3
Regeneration studies.....	D-1 to 6
Species	
Americianum.....	HA-6, 15, 20
Curvatum.....	HA-15, 20
Cynosbati.....	HA-4,6,9,11,15,18,20
Glandulosum (Skunk currants).....	HA-4, 11, 15
Rotundifolium.....	HA-4,6,9,11,15,18,20

## STATE AND PRIVATE LANDS

Future Plans.....	12
Narrative Section.....	9 to 12
Statistical Section	
Ribes eradication in 1941, by states.....	A-5
Ribes eradication 1918-1941, by states.....	A-13, 14

## TRUCK DATA

As of December 31, 1941	
Georgia.....	M-1
Maryland.....	M-2
North Carolina.....	M-3
Tennessee.....	M-4
Virginia.....	M-6
West Virginia.....	M-8
As of June 18, 1942	
List of all trucks in region arranged by license number..	M-10

## WHITE PINE

Acreage Figures	
Indian Reservations.....	A-13
National Forests.....	5, A-14
National Parks.....	1, A-12
State and private lands.....	9, A-13
Jefferson National Forest by ranger district & county....	HA-3
The Region.....	A-11
Fast growth of white pine on the Pisgah National Forest in N.C.-	HA-18
Plantations	
Cherokee National Forest.....	HA-15
Cumberland National Forest.....	HA-2
Monongahela National Forest.....	HA-11
Pisgah National Forest.....	HA-18
Replacing chestnut on Cumberland National Forest.....	HA-1
Values..	
In National Forests, (see <u>Surveys</u> ).....	5
Of ornamental pines in Delaware.....	9
On State and private lands (see <u>Surveys</u> ).....	9







## NARRATIVE SECTION

A report on blister rust control in the Southern Appalachian Region during 1941 has been prepared in two sections, narrative and statistical. Acknowledgment is hereby made to Mrs. Hudgins and Mrs. Fischer, and Messrs. Ball and Cooper, of the Richmond office, and to Mr. Yost of Maryland, of their assistance in the preparation of this report.

The narrative section is divided into the three land ownership classes of National Forests, National Parks, and State and Private lands. Only five acres of pine have been found on Indian Reservations, and these with control acreage of 100 acres were worked several years ago without the finding of any ribes. Hence Indian Reservations are omitted from this section.

### NATIONAL PARKS

In the Southern Appalachian Region there are only two National Parks— the Shenandoah and the Great Smoky Mountains. The Blue Ridge Parkway connects them. Surveys at present show 69,716 acres of white pines in these three Park areas with a control area of 144,735 acres, all of which, except 73 acres in the Shenandoah, have been worked.

Initial eradication for all years beginning in 1933 has been performed on over 144,662 acres. 1,737,979 ribes bushes have been destroyed and 15,127 man days labor expended in the eradication work. Rework has been performed on over 29,855 acres; 641,736 ribes have been destroyed and 9,839 man days labor employed. Combining all work 2,379,715 ribes have been destroyed on 174,517 acres at an expenditure of 25,016 man days labor.

During 1941 in initial work 124 bushes were destroyed in working 77,269 acres with 461 man days labor. In rework 201,117 ribes bushes were destroyed on 6,115 acres with 1,359 man days labor. Combining all work 201,241 bushes were destroyed on 83,384 acres with 1,820 man days labor. All of the areas initially worked in the Great Smoky Mountains National Park in Tennessee (77,269 acres in 1941) were free of wild ribes. 170 acres of the Blue Ridge Parkway in North Carolina worked last year were also ribes-free. In the Shenandoah Park in Virginia, however, where the entire area covered (5,945 acres) was rework, the bushes were quite numerous, the total number removed being 201,117 and the bushes averaging 33.8 per acre.

Statistics for 1941 and for all years 1918 to 1941 on ribes eradication are to be found on Pages A-5 and A-12. A short summary of the status of work on each National Park follows.

### GREAT SMOKY MOUNTAINS NATIONAL PARK

This Park lies in North Carolina and Tennessee astride the high mountain range of the State line.

#### Pine and Control Acreages

Surveys have been completed in the Park in both States. In North Carolina there are 12,325 acres of white pine and in Tennessee 41,766 acres, making a total of 54,091 acres. In North Carolina the control acreage is 15,601 and in Tennessee 101,964, making a total of 117,565 acres. All of the Tennessee portion is ribes-free, while in North Carolina the entire control area is ribes-free except approximately 1,000 acres in the Catalooche Creek watershed in Haywood County. There are excellent stands of white pine in Tennessee under 2600 feet elevation in the Cades Cove section and in North Carolina in the Catalooche Creek section from 2500 to 4,000 feet. The



absence of ribes in the Park in Tennessee is probably due to the low elevation at which white pine is found there. Ribes species include rotundifolium and cynosbati.

### Local Control

In 1941 the only eradication work carried on was in Tennessee. There were 121 ribes destroyed (cultivated or escaped), 77,269 acres of control land initially worked with 460 man days labor. This work protected 35,777 acres of white pine. Ribes eradication began in 1933. From that year through 1941 in Tennessee 137 ribes were destroyed on 101,964 acres with 721 man days labor. In North Carolina 83,000 ribes were destroyed and 29,593 acres worked with 1,683 man days labor. (For separation of initial and rework see table on Page A-12). For the Park as a whole 83,137 bushes have been destroyed on 131,557 acres of land with 2,404 days of labor.

### BLUE RIDGE PARKWAY

This Parkway, connecting the Shenandoah National Park in Virginia with the Great Smoky Mountains National Park in North Carolina, is a long narrow strip of land with occasional recreation areas along it running up to 5,000 acres and more. Detailed surveys of white pine on the Parkway have not been made as yet since surveys have not been entirely completed in Virginia or North Carolina, and since the part completed lies in the southern counties of Virginia where no work has been carried on for several years.

Cursory surveys by the Park Service show ribes-bearing areas along the proposed Parkway in North Carolina from Grandfather Mountain northeast for about 35 miles, and in Virginia at four different places from the Peaks of Otter northeast to the Skyline Drive. In Virginia and North Carolina there are stretches of the Parkway, probably 100 miles or more in extent, shown by the Park Service as pine area which <sup>is</sup> also ribes-free. In North Carolina 170 acres were reworked in 1941 and three bushes destroyed with one day of labor. This was formerly worked as private land.

Blister rust was found in 1941 on the Parkway on ribes in McDowell County, North Carolina.

From the above it is evident that surveys of pine areas on the Parkway are incomplete, and that they cannot be finished until the Parkway itself is completed, or the road bed constructed or at least determined. The Bureau should assist the Park Service in this white pine-ribes survey when and if funds are made available for that purpose.

As for eradication, since WPA funds are not available in Virginia for this work, the Park Service should use its own funds for that purpose, working under its own field offices. In North Carolina WPA may continue for part of the fiscal year 1943, and there may be opportunity for survey and eradication by WPA workers on the Parkway. Mr. Ball states that the best pine along the Parkway in North Carolina has been covered by grid survey, and that it is largely ribes-free; but there remains the actual calculation of the amount of pine in the Parkway.

### SHENANDOAH NATIONAL PARK

This Park extends in Virginia over at least parts of the seven counties of Albemarle, Greene, Madison, Page, Rappahannock, Rockingham, and Warren, and lies in the Blue Ridge Mountains.



## Pine and Control Areas

The best estimates from surveys show an acreage of 15,590 of white pine area, and about 27,000 of control area. While eradication has been carried on initially on more than 26,927 acres, the Park Service has decided for the present to restrict eradication work to about 55 areas with pine acreage of 2,543 and control acreage of 7,350. Grid surveys have been practically completed for this restricted list of areas which embrace the most desirable areas of pine. Surveys and eradication have been conducted beginning in 1933, the early work being done by the Park Service with CCC labor. The Bureau worked 669 acres in 1936 and 485 acres in 1937, and did not do any large scale work in the Park until 1940 when 5,266 acres were covered. In 1941 the Bureau covered 5,945 acres. The 1940 and 1941 eradication was largely new work.

## Ribes Eradication

In 1941 all control work was rework, 201,117 ribes bushes being destroyed on 5,945 acres in 1,359 man days at a cost of \$3,414.21. Per acre figures are, ribes 33.8; man days .23, and cost 57¢. Cumulative figures on local control for this Park follow:- 2,296,575 ribes have been destroyed on 42,620 acres in 22,611 man days. This represents initial and rework. Some of the areas have been worked three and four times in the past nine years. For details on each working see table on Page A-12.

## Checking

While control areas have been checked in the past no person has been assigned especially to checking until 1941 when Mr. Martin Q. Miller worked as checker for the Park Service under the direction of the Assistant Forester. He post checked ten of the most important areas, including Hawksbill, Pinnacles, Big Meadows, Skyland, Spitler Pines, Pass Mountain, Neighbor Mountain, Elkwallow, Hughes River Gap and President's Camp, on a 5 per cent basis. All of these areas had been worked last either in 1940 or 1941. Nine of them exceeded 25 feet of live stem per acre, the figures being 43, 56, 185, 212, 298, 325, 530, 794 and 1,018 feet of live stem respectively. A total of 4,402 acres was checked. 2,181 acres had more than 25 feet of live stem per acre and were recommended for reworking. 2,106 acres were found with less than 25 feet of live stem and 280 acres were ribes-free.

## Canker Elimination

Since 1935 canker elimination has been carried on in the Shenandoah National Park with CCC labor for the most part. The areas worked are in Greene, Madison, Page and Rappahannock counties, and lie along Skyline Drive. They include Elkwallow, Hawksbill and Haywood Mountains, Skyland, Black Rock and Big Meadows, Simmons Gap, Hughes River Gap and the Pinnacles (Sexton Shelter). Figures for years 1935 to 1941 follow.

DATA ON CANKER TREATMENT

Year	Acreage Treated	Number of Trees			No. Cankers Removed	No. 8-hr Man Days	Cost
		Examined	Treated	Removed			
1935	194	14,755	1,795	277	9,296	295	\$ 619.64
1936	90	3,151	1,005	122	5,622	168.5	334.10
1937	50	855	120	2	580	19.5	31.20
1938	314	4,708	2,583	78	4,213	179	458.30
1939	37	1,628	439	32	1,179	121 (1)	39.00 (1)
1940	346	3,540	1,016	44	3,798	65	111.00
Totals	1,031	28,637	6,958	555	24,688	848	\$1,593.24

(1) See following page.



(1) Omitted from these last two columns is a little work by Boy Scouts. Analyzing the above data we find that for all years the per cent of trees infected was 26.2; the number of cankers removed per acre 23.9, the number of man days per acre .82; the cost per acre \$1.54 and the cost per man day \$1.88. This low cost is accounted for by CCC labor at \$1.00 per 6-hour day.

### Infection Conditions

Despite control work performed the rust has been increasing in several areas in the Park. This is due principally to carelessness of the CCC crews, and the fact that at critical times insufficient labor was allotted to control work. Rework of areas with heavy comeback of ribes was not always done early enough to prevent infections. Up to July 1941 the Park Service maintained a protective strip around white pine of from 100 to 200 feet "where slopes are steep and foliage is dense," according to Mr. L. F. Cook, Acting Chief of Forestry of the Park Service. Because of the spread of the rust the width of this protective strip was increased to 900 feet on July 2 for the Shenandoah and other Southern Appalachian areas. Ribes along Skyline Drive are in their optimum habitat and regeneration from seed in places is very abundant, (at rate of 10,000 per acre in spots). The areas with heaviest infection are tabulated below.

#### INFECTION DATA

County	Area	Per Cent Infection	Acreage Worked
Madison and Page	Haywood & Hawksbill Mts.	50.2	35
Page	Skyland	36	59
Page and Rappahannock	Elkwallow	33.1	30
Madison	Pinnacles (1)	33.1	45
Madison	Hughes River Gap	28.8	15
Page	Big Meadows	25.3	150
Greene	Simmons Gap	11.3	2
Rockingham	Black Rock	6.8	197

(1) Includes Sexton Shelter.

The above table shows infected trees in the canker elimination work. Since cankers have been cut out the infection should decrease if ribes eradication is conducted at frequent intervals.

### Cost Data

Blister rust control in 1941 in the National Parks of the region cost \$5275.56 exclusive of supervision. Of this, eradication cost \$4925.56 and post checking \$350.00. For all years 1933 to 1941 inclusive the total cost of eradication, canker elimination (and post checking in 1941) amounted to \$57,439.50. Details for 1941 and previous years are found in the following table.

#### CONTROL COSTS FOR NATIONAL PARKS 1933 THROUGH 1941

National Park	State	Cost thru 1940	Cost in 1941	Cost thru 1941
Blue Ridge Parkway(Erad)	N. C.	-	\$ 2.64	\$ 2.64
Great Smoky Mts.	" N. C.	\$3,998.26	-	\$3,998.26
Great Smoky Mts.	" Tenn.	344.15	1,508.71	1,852.86
Shenandoah	" Va.	46,228.29	3,414.21	49,642.50
Total Eradication Costs		\$50,570.70	\$4,925.56	\$55,496.26
Shenandoah (Canker Elim.)	Va.	1,593.24	-	1,593.24
Shenandoah (Post Checking)	Va.	(1)	350.00	350.00
Total Control Costs		\$52,163.94	\$5,275.56	\$57,439.50

(1) Checking in 1938 by Agent Early and in 1939 by Mr. Ball charged to Supervision.



## Field Agreement

In September 1940 a working field agreement was executed by Mr. Lassiter, Superintendent of the Park, and Mr. Luce, our State Leader in Virginia, relative to future eradication work. Certain areas listed in Summary No. 1 along Skyline Drive which were most important were designated as high priority areas on which protection was to be maintained by the Shenandoah National Park. 32 areas embracing 1,674 acres were included in Summary No. 1. Other areas were designated in Summary No. 2 for maintenance of protection by the Bureau, being areas near the local supply of WPA labor, or areas intermingled with private lands. This second list included 23 areas with 761 acres of white pine. In the summer of 1941 this list was modified by mutual consent, and three areas in Summary No. 1 embracing 74 acres of pine were dropped.

## Future Work.

Arrangements have been made with the Park Service to employ a checker in the calendar year 1942 who will continue checking old eradication areas to determine the comeback of ribes and the areas which need reworking first. The Park Service included in their budget for the fiscal year 1943 funds for maintaining protection on some of the first priority areas.

## NATIONAL FORESTS

The National Forests in the Southern Appalachian Region are embraced in the two National Forest Regions No. 7 and No. 8. White pine are present in all of the nine National Forests; Cumberland, George Washington, Jefferson and Monongahela in Region No. 7 and Chattahoochee, Cherokee, Nantahala, Pisgah and Sumter in Region No. 8.

Surveys for pine and ribes have been conducted in all of the Forests and have been completed on the Cumberland, Nantahala, Pisgah and Sumter and on the George Washington in West Virginia. Initial eradication has been completed in these Forests. In the other Forests surveys and initial eradication relative to the total estimated control acreage have been conducted to the following extent:

Chattahoochee	Georgia	89.	Per cent
Cherokee	Tennessee	90.2	" "
George Washington	Virginia	95.5	" "
Jefferson	Virginia	88.7	" "
Monongahela	West Virginia	94.5	" "

When all of the Forests are considered, 96.4 per cent of the entire estimated acreage in the control areas has been initially worked.

## Surveys

Surveys and estimates reveal an area of 576,409 acres of white pine in the nine Forests with a control acreage of 1,231,010 acres. At a conservative estimate of \$5.00 per acre the white pine in these national forests is worth at least \$2,882,045. This estimate is made in the absence of figures from the Forest Service. Of this total control acreage 1,187,279 acres have been initially worked, and 43,731 acres remain to be worked. In addition 235,584 acres have been reworked. A total of 10,505,125 ribes has been destroyed on the Forests since eradication began in 1928 on the George Washington. 83,382 man days labor were expended in this control work. (For details by Forests see Pages A-14 and A-15.)



Many agencies have been involved in the survey and eradication work, particularly CCC and WPA, with funds and services contributed by the States, some by private parties, such as Girls Scouts, and other funds from regular appropriations of the Bureau of Plant Industry and of Entomology and Plant Quarantine, and of the Forest Service.

The Nantahala, Sumter and Cumberland Forests are ribes-free, or practically so. (Wild ribes were found on only three small areas in 1934 in Kentucky which were credited to the Forest Service since they were in the purchase unit at that time). A very high per cent of the control area in the Chattahoochee, Cherokee and Pisgah National Forests is ribes-free. Though exact figures are not available it is believed to be over 97.8 per cent for the Chattahoochee, over 89 per cent for the Cherokee, and over 88 per cent for the Pisgah. Ribes-free control areas in the Jefferson are at least 37.5 per cent; in the George Washington in West Virginia at least 62 per cent; in the George Washington in Virginia at least 18 per cent and in the Monongahela at least 70 per cent. A table follows showing acreage conservatively estimated to be ribes-free and ribes-bearing. Very likely the ribes-free areas will be reduced considerably, particularly in Virginia, when more intensive surveys are finished. The present figures show at least 81.6 per cent of the entire control acreage in the Forests to be free of wild ribes, leaving only 226,560 acres in the ribes-bearing category.

RIBES-FREE AND RIBES-BEARING (1) ACREAGE IN NATIONAL FORESTS

National Forest	State	Surveyed or Estimated Total Control Acreage	Estimate of Ribes- Free Acreage	Estimate of Ribes- Bearing Acreage	Estimated Per Cent of Ribes- Free Acreage.
Chattahoochee	Ga.	465,000	455,000	10,000	97.8
Cherokee	Tenn.	245,028	219,028	26,000	89.3
Cumberland	Ky.	30,565 (2)	30,465	100	99.6
George Washington	Va.	132,000	25,000	107,000	18.9
George Washington	W. Va.	48,417 (2)	30,000	18,417	62.
Jefferson	Va.	40,000	15,000	25,000	37.5
Monongahela	W. Va.	80,000	56,057	24,943	70.
Nantahala	N. C.	55,103 (2)	55,003	100	99.8
Pisgah	N. C.	131,197 (2)	116,197	15,000	88.5
Sumter	S. C.	3,700 (2)	3,700	-	100.
Totals		1,231,010	1,005,450	226,560	81.6

(1) This refers to wild ribes.

(2) Surveys and initial eradication completed.

Local Control

In 1941 ribes eradication was conducted on five of the nine Forests, namely the Chattahoochee, Cherokee, George Washington, Monongahela and Pisgah. Both initial and rework were performed. A total of 429,635 ribes were destroyed, 102,687 acres worked and 5,438 man days labor used. Bushes averaged only four per acre. All of the work in 1941 was done by the Bureau. For the years 1918 to 1941 inclusive 10,505,125 ribes were removed from 1,422,863 acres, an average of eight per acre. Man days labor amounted to 83,382. Data for individual forests are to be found on Pages A-6, A-14 and A-15.



## Canker Elimination

Only on the George Washington National Forest have cankers been removed from diseased white pines. In 1941, 27,614 trees were examined, 3,200 treated, 1,873 trees removed, and 47,993 cankers removed in 180 man days labor. 304 acres were worked at a cost of \$1.58 per acre. Canker elimination began on this Forest in 1937 and has continued ever since.

## Nursery Sanitation

There is only one nursery in the National Forests of the region, and this is located at Parsons, West Virginia on the Monongahela. Work began here in 1929 and has been continued largely by the Forest Service. In 1941 bushes pulled on the area of 633 acres amounted to 503, or less than one per acre. This annual reworking of the nursery and environs has prevented the rust from invading the pines in the nursery. Rust was discovered a half mile distant on ribes in 1935, but has not been observed since. More than 30,546 ribes have been removed in the sanitation area since 1928. (For details see Pages I-1 to I-3).

## Blister Rust Infections

The rust has invaded the George Washington and Monongahela Forests, doing considerable damage in the former, but very little damage so far as observed in the latter. On the George Washington new infection areas are being found annually. Infections are general in Augusta, Highland and Rockingham counties with per cent of pine infection in infected areas ranging from one to 30 per cent or more. With the spread of the rust southward into North Carolina and Tennessee in 1941, it will be only a few years before pines are found diseased in those states, as well as in the Jefferson National Forest in Virginia.

## Cost Data

Blister rust control for 1941 in the National Forests of the region, exclusive of supervision, cost \$15,080.23 divided as follows:- Eradication \$14,468.00, Canker Elimination \$481.83 and Nursery Sanitation \$130.40. This last amount was spent by the Forest Service, the other costs by the Bureau with WPA and other funds.

For all years from 1928 thru 1941 the total cost, exclusive of supervision, was \$183,764.57, divided as follows:- Eradication \$176,671.48, Canker Elimination \$3930.73 and Nursery Sanitation \$3,162.30. Costs have been borne by the Forest Service and the Bureau and by State and County. Details on these costs follow:

## Eradication Costs

Ribes eradication in National Forests which began in the George Washington in 1928 has cost, exclusive of supervision, \$176,671.48. Details by years through 1940 for each State are to be found in the 1940 annual report for the region. A table follows giving the costs for each State through 1941.

### ERADICATION COSTS ON NATIONAL FORESTS 1918 - 1941

State	Costs thru 1940	Costs in 1941	Total Costs thru 1941
Georgia	\$33,530.50	\$ 2,840.78	\$36,371.28
Kentucky	-(1)	(1)	(1)
North Carolina	20,440.96	4,730.88	25,171.84
South Carolina	1,199.00	-	1,199.00
Tennessee	25,747.63	1,626.18	27,373.81
Virginia	57,422.09	4,906.70	62,328.79
West Virginia	23,863.30	363.46	24,226.76
Totals	\$162,203.48	\$14,468.00	\$176,671.48



(1) The land now in the Cumberland Forest in Kentucky was worked in 1934 when it was privately owned. Surveys of Forest Service plantations and other native stands in 1938 and 1939 were made by Messrs. Pierce and Ball and charged to supervision.

#### Canker Elimination Costs

Total cost on the George Washington (the only Forest worked) from 1937 through 1941 was \$3,930.73.

#### Survey Costs

These have not been separated by ownership.

#### Nursery Sanitation Costs

The only nursery maintained by the Forest Service is the Parsons on the Monongahela in Tucker County, West Virginia. From 1928 to 1941 the cost of eradication including survey was \$3,162.36. This included \$50.00 paid by the State and County to owner of cultivated bushes as compensation for their destruction.

#### Plans for the Future.

At the close of 1941 the WPA program was being curtailed extensively, and as the first six months in 1942 passed it became evident that the Bureau could do little work on the National Forests after the close of the fiscal year 1942. Therefore work plans for all the Forests for the fiscal years 1943 and 1944 calling for participation of the Forest Service in blister rust control work were drawn up in the early summer of 1942 and submitted to the Regional Foresters of Regions 7 and 8 for their consideration.

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Details for each National Forest except the Nantahala and Sumter are found in the following pages, Section HA.



## STATE AND PRIVATE LANDS

### Foreword

Blister rust control began in the Southern Appalachian States with surveys for the rust in 1910 and for both pine and the rust in 1918 and 1919 in Kentucky and Tennessee. Work was resumed on a large scale on State and private lands in 1933 with the advent of the CCC and in 1934 with the coming of the FWA. In the past eight years surveys and ribes eradication have been carried on and for the time being completed in Delaware, the District of Columbia, Kentucky and South Carolina. In 1941 work was carried on in Georgia, Maryland, North Carolina, Tennessee, Virginia, and West Virginia.

### Surveys

Surveys were conducted in only five of these six states, work in Maryland having been completed before 1941. All surveys this past year were conducted on the grid system with mile square grids, and blocks of grids eight miles east and west and six miles north and south. Great progress has been made in our preeradication surveys since the grid system was inaugurated by Mr. Ball in October 1938, the records showing unsurveyed areas in only the four states of Georgia, Tennessee, Virginia and West Virginia. There is an estimated total unsurveyed area of 58,577 acres of State and private lands. Surveys will be continued in 1942 and an effort will be made to complete them within the next few years. Surveys in 1941 were not broken down in our omnibus tables by ownership. However, these surveys resulted in an increase of the estimated total control area on all State and private lands of 210,563 acres.

Cumulative surveys to date and estimates of unsurveyed areas show 1,948,487 acres of white pine with 4,077,336 acres of control area. Of this 4,018,759 acres, or 98.5 per cent, have been initially worked. Late figures are unavailable on values of white pine in state and private ownership. The pine itself may be only three years old, just planted, or ranging in size from saplings to large poles and mature timber. Mature pines and large poles are being cut annually and this is particularly true of the last three years. The number of trees per acre also varies from about 25 per acre on ribes-free land to 2,000 or more per acre in fully stocked pure stands. A minimum value of \$5.00 per acre is placed on this pine in order to be conservative and at that rate the pine in the woodlots and forests would be worth about \$9,742,435. In addition there are probably tens of thousands of ornamental white pines in the region in areas that have been given protection. The value of these, though unknown, is high. For example, in Delaware 4,248 ornamental pines were valued conservatively at \$224,957. In western North Carolina at Asheville, Biltmore, Hendersonville, Brevard, Blowing Rock and Linville, the white pine is valued highly as an ornamental tree just as in New England and the State of New York, and plantings have been made there for over 50 years.

### Local Control

In 1941 ribes eradication was performed in six States, 1,459,270 bushes being destroyed on 429,801 acres with 17,665 man days of labor. Eradication on State and private lands represented 70.9 per cent of the man days, and accounted for 69.8 per cent of the ribes and 69.8 per cent of the acreage. The remaining percentages are for National Forests and National Parks. Initial eradication accounted for 332,757 acres, or 77.4 per cent, rework for 97,044 acres, or 22.6 per cent. Initial work accounted for 776,820 bushes, or 53.2 per cent, rework for 682,450 bushes, or 46.8 per cent. Forty-four per cent of the labor was initial, 56 per cent rework.



In other words, since there was an average of seven bushes per acre on the rework it required more labor than where there were 2.3 bushes per acre. Much of the initial work on State and private lands has shown the areas to be ribes-free, and here the coverage is not over five per cent. Most of the rework has been crew work with 100 per cent coverage.

For the years 1918 to 1941 inclusive, 18,134,266 ribes were destroyed, 5,802,--105 acres worked, and 174,854 man days labor used on State and private lands. Compared to the total work on all classes of land, State and private lands represent 61.7 per cent of labor, 58.4 per cent of the bushes and 78.4 per cent of the acreage. In the future there will be less work and fewer acres covered unless the States assume a larger responsibility in blister rust control.

### Canker Elimination

The elimination of cankers on infected trees and removal of badly infected trees on State and private lands has been practiced only in Maryland and Virginia. In 1941 no canker elimination work was performed. Canker elimination began in Maryland in 1936 on Resettlement Lands (formerly considered as Federal but now as State since lands leased to State for 99 years) and continued in 1937 and 1939. In 1937 and 1939 only one area was on private land, the others being on State property. Cumulative figures for Maryland for all three years show 1,868 acres examined, 139,354 trees examined, 258 badly infected trees removed, 5,033 trees treated, 14,725 cankers removed, 927 man days labor used. Details by years are found in the following table.

CANKER ELIMINATION ON STATE AND PRIVATE LAND IN MARYLAND  
1936, 1937 and 1939

Year	Acres Worked	No. Trees Examined	No. Trees Treated	No. Trees Removed	No. Cankers Removed	No. 8-hr. Man Days(1)	Cost (1)
1936	30	2,878	1,355	14	6,071	83	\$ 228.03
1937	1,062	80,380	2,301	89	5,446	540	1,532.63
1939	776	56,096	1,377	155	3,208	304	855.06
Totals	1,868	139,354	5,033	258	14,725	927	\$2,615.72

(1) This includes days spent searching for infected trees.

Year	Cost Per Acre	Cost Per Day	Per Cent Infected	Per Cent Infected Trees Removed	No. Acres Worked Per Man Day	No. Trees Treated or Removed Per Day	No. Cankers Per Treated Tree
1936	\$7.60	\$2.74	47.6	1	.36	16	4.5
1937	1.44	2.84	2.9	3.9	1.97	4	2.3
1939	1.10	2.81	2.7	11.2	2.55	5	2.3
Averages	\$1.40	\$2.82	3.8	5.1	2.01	5.7	2.9

In Virginia infected pines on private land near or within the boundaries of the George Washington National Forest were treated for cankers in 1939 and 1940. Data on 1941 canker elimination performed in Virginia is given on Pages J-1 and J-2. During the former two years 891 acres were covered, 100,761 trees examined, 342 badly infected pines cut down, 2,045 trees treated, 9,469 cankers removed, 303 man days labor used, at a cost of \$650.16. A table showing this information is given on the following page.



CANKER ELIMINATION ON PRIVATE LANDS IN VIRGINIA  
1939 and 1940

Year	Working	County	Pine Acreage	No. Trees Examined	No. (1) Cut Cankers Treated	Down	Removed	No. 8-hr. Man Days	Cost
1939	1st	Highland	120	70,314	1,337	326	7,807	145	\$249.00
1939	1st	Rockingham	236	16,758	398	16	711	53	136.12
Totals			356	87,072	1,735	342	8,518	198	\$385.12
1940	1st	Rockingham	440	9,228	188	-	487	48	\$121.84
1940	2nd	Rockingham	95	4,461	122	-	464	57	143.20
Totals			535	13,689	310	-	851	105	265.04
Grand Totals both years			891	100,761	2,045	342	9,469	303	\$650.16

(1) This refers to number of trees.

Year	Cost Per Acre	Cost Per Day	Per Cent Infected Trees	Per Cent Infected Trees Removed	No. Acres Work Per Man Day	No. Trees Treated or Removed Per Day	No. Cankers Per Treated Tree
1939	\$ 1.08	\$ 1.94	2.4	16.5	1.8	10.5	4.9
1940	.49	4.95	2.3	-	5.1	3.	2.7
Averages	\$ .73	\$ 2.14	2.3	14.4	2.9	7.8	4.6

Comparing data for Maryland and Virginia we find cost per acre averaging \$1.40 and 73¢ respectively. Per cent of trees infected averaged 3.8 and 2.3 respectively. Number of acres worked per day averaged 2 and 2.9 respectively; number of cankers per treated tree averaged 2.9 and 4.6 respectively.

#### Infection Conditions

Highest per cent of infection in any of the six infected states of Delaware, Maryland, Virginia, West Virginia, North Carolina and Tennessee is to be found in western Maryland. In one unprotected area 100 per cent of the trees are infected. In other lots infections vary down to zero. In Virginia the highest infections are in the National Parks and National Forests, but pines on private lands are infected in several counties. In West Virginia the highest per cent of infection is on private lands near Durbin, where 30 per cent of the pines on a 1/10-acre area are infected. New infections have sprung up on ribes on private land in four counties in southern West Virginia, six counties in southern Virginia, three counties in North Carolina and two counties in Tennessee. In Maryland and Virginia new infections on pine are increasing yearly.

#### Ribes-free and Ribes-bearing Areas

While our permanent records have not been completed it is possible to arrive at some conservative acreage figures concerning freedom from ribes. The pine areas in Delaware, the District of Columbia and South Carolina are entirely free of wild ribes, although there have been and still are cultivated gooseberries near these areas. In Maryland less than 56,000 acres out of 176,000 are classed as ribes-bearing. In Georgia, North Carolina and Tennessee ribes-bearing lands occupy a relatively small per cent of the area, probably not occurring on more than 10,000, 25,000 and 25,000 acres respectively. It is in Virginia and West Virginia that we find the highest per cent of ribes-bearing lands. I have estimated about 60 per cent of the entire control acreage in these two states as ribes-bearing. Certainly the figure will not be higher. With this high estimate we get a total of 816,000 acres which



may be ribes-bearing. This is only 20 per cent of the entire control area on State and private lands.

When our permanent records have been more nearly completed it will be possible to make better estimates on ribes-bearing acreage. The following table shows this data for State and private lands.

#### ESTIMATE OF RIBES-FREE AND RIBES-BEARING AREAS

State	Total Estimated Acreage of State & Private Lands	Estimated or Surveyed Acreage	
		Ribes-Free (1)	Ribes-Bearing (1)
Delaware (2)	4,267	4,267	-
Dist. of Columbia (2)	1,875	1,875	-
Georgia	485,000	455,000	10,000 (Est.)
Kentucky	50,000	49,900	100
Maryland (2)	175,953	120,144	55,809
North Carolina (3)	1,384,715	1,359,715	25,000 (Est.)
South Carolina (2)	25,935	25,935	-
Tennessee	753,008	728,008	25,000 (Est.)
Virginia	525,000	225,000	300,000 (Est.)
West Virginia	671,583	271,583 (4)	400,000 (Est.)
Totals	4,077,336	3,241,427	815,909

(1) "Ribes" indicates wild ribes.

(2) Surveys completed.

(3) Surveys completed, but some on old system which did not segregate ribes-free from ribes-bearing lands.

(4) Prior to 1939 surveys did not show ribes-free acreage, but records of 1939, 1940 and 1941 show 180,940 acres ribes-free in eight counties on State and private lands.

#### Future Plans

When and if the states of Delaware and South Carolina make available funds for blister rust control a program to eliminate cultivated ribes near valuable white pine stands will be renewed. In Maryland much work needs to be done in Garrett County. The State authorities have been given a work plan for the next three years based on State appropriations and Lea Act funds. At present the State is not meeting the situation. In Georgia, North Carolina and West Virginia State appropriations seem to be ample for the present, the last two states appropriating \$5,000 each for the fiscal year 1943. When the rust becomes more established in West Virginia then it may be necessary to request an increase in State participation in order to speed up eradication before pines become badly infected. In Virginia we plan to carry on a small program with cooperative funds, \$3,200 being available for the fiscal year 1943. A state appropriation of \$5,000 has been urged by the State Entomologist for several years. This sum would probably be adequate if made available annually and if equalled by Federal allotment for cooperative work, particularly if expended in the northern half of the State where infection is heavy.



## Summary

## Introduction

750-1000 2000

## Cultivated Fibers

White Pine



Wolfe County	-----	22,003
Powell	"	2,265
Menifee	"	1,314
Morgan	"	409
Lee	"	351
Magoffin	"	30

TOTAL	-----	26,372	26,372
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Surveyed in 1939

Rowan County	-----	77
Whitley	-----	10

TOTAL	-----	87	87
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GRAND TOTAL	-----
Both Years	26,459

Table Showing Planted White Pine Acreage in Cumberland National Forest through 1939.

Jackson County  
 Birch Lick, War Fork Creek, Turkey Foot 41.5 acres

Laurel County		
Sublimity Trail, Sams Branch	2.6	"
McCreary County, Funston Ridge	6.8	"
Menifee County, Beaver Creek	26.1	"

TOTAL ACREAGE PLANTATIONS	-----	77.0	"
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# JEFFERSON NATIONAL FOREST

The Jefferson National Forest was made up of portions of the old Natural Bridge National Forest and the Unaka National Forest.

Blister rust control work began on the Forest in 1933 with the employment of a checker Mr. W. H. Robens who worked on the old Unaka with men from 3 CCC camps. Survey and eradication continued each year thereafter through 1939 with men from CCC, PWA or WPA.

## Surveys and Records

Preeradication surveys for white pine and ribes were carried on annually, by the traverse method, maps being made for individual areas by Robens in '33 and '34. PWA and WPA men made maps of individual areas only where ribes were present to the extent of 50 bushes on ten acres. All pine areas were shown on Forest Service maps, County maps, or U. S. Geological Survey quadrangles, whether ribes were present or not. Pine Area record sheets were made for each area and copies are filed in the State Office of Blister Rust Control at Harrisonburg and at Regional headquarters at Richmond Va. Large summary sheets giving data of survey as well as eradication have been made for each county, and these are on file at above two offices and at the National Forest headquarters at Roanoke. Maps are on file in Harrisonburg office.

## White Pines

Native white pine stands are present in the Holston Ranger District in Carroll, Grayson, Smyth, Washington and Wythe Counties, with a few plantations in Rockbridge County and in Botetourt County. Our Pine Summary Sheets show the following figures:

### DATA ON PINE AND CONTROL ACREAGES

Ranger District	County	No. White Pine Areas	Pine Acreage	Control Acreage	Ribes Free Acreage	Ribes Bearing Acreage	Year Ribes Areas Last Worked
Glenwood	Botetourt	1	2	85	55	30	1940
"	Rockbridge	5	31	565	430	135	1940
Holston	Carroll	5	710	2,577	2,577	0	1934
"	Grayson	13	2,385	6,642	580	6,062	1937 & 38
"	Smyth	17	1,367	5,349	1,973	3,371	1937 & 38
"	Washington	27	2,112	5,942	4,172	1,770	1934 to 37
"	Wythe	15	3,135	13,587	2,525	11,062	1937 to 38
		83	9,742	34,747	12,317	22,430	
Acreage Adjustment not included White Pine Summary to agree with Cumulative figures in Omnibus Table			555	770			
Totals			10,297	35,517			



Note: There are several thousand acres of native white pine in Arnolds Valley, North Creek and McFalls Creek which are not included in above summaries, and for which no record sheets have been made.

No data is available on white pine in other Ranger Districts.

### Ribes

The two principal species of Ribes are cynosbati and rotundifolium. Glandulosum however is found in Skull Gap near the N.C. line in one or two places. Ribes are not ubiquitous, many pine areas being entirely free of them. Of a listed control acreage in the Jefferson National Forest 34,747 acres, 12,317 or 35.4 percent have been classified as ribes-free. Undoubtedly this will be increased as each individual pine area bearing ribes is better mapped to throw out ribes-free sections. Some areas average several hundred bushes per acre, but the average for the 39,480 acres worked (including all workings) is 34.1 bushes.

### Ribes Eradication

No ribes were destroyed in the Forest in 1941. Cumulative figures on Ribes eradication in the Forest are as follows:

RIBES ERADICATION 1935 - '41 INCLUSIVE							
Working	Acreage	No. Ribes	No. & Hr.	Average No.	Average No.		
	Worked	Destroyed	Man Days	Ribes Per Acre	Acres Per		
			Later		Man Day		
First	35,517	576,907	7,068	16.2	5.0		
Rework	3,963	767,772	5,387	193.7	0.7		
TOTAL	39,480	1,344,679	12,455	34.1	3.1		

Initial Work 35,517

Estimated unworked acreage in Forest 4,483

Total estimated Control Acreage 40,000

### Blister Rust

While no infections seem to have been found on National Forest land of the Jefferson, the rust has been found on Ribes in 8 of the counties in which the Forest is located via:

Alleghany County	'37	Grayson County	'41
Rockbridge County	'38	Pulaski County	'41
Bland County	'41	Smyth County	'41
Giles County	'41	Wythe County	'41

It will probably be only a few years before it will be found on pine in the Forest particularly if pine acres are scouted each year in the fall.



Budget for Fiscal Year 1943

A budget calling for ribes eradication on 12,986 acres in fiscal year '43, out of an estimated total of 22,450 acres of ribes-bearing land has been presented to the Regional Forester, Mr. Means, (May 1942). Areas were included which had been worked last 5 years or more previously. Working this acreage will take 2440 man-days labor and 132 days supervision, (or 1 supervisor 5 months). Total cost is estimated at \$9825, made up of Supervision \$860, Labor 8540, and Transportation etc. \$425. The number of laborers was estimated on a basis of 5 acres per man day, and cost of labor at \$3.50 per day. Cost per acre is estimated at 80.5 cts.

The areas which should be worked in '43 are as follows:

Grayson County	5035 acres
Smyth County	2787 "
Washington County	1523 "
Wythe County	3630 "
TOTAL	12985



## Introduction

Blister rust control began in the old Shenandoah National Forest (later changed to the George Washington) in 1928, and it has continued ever since, the survey and eradication work being done either by the CCC, the PWA or the WPA.

## Surveys and Records

It is estimated that there are about 132,000 acres of control area in the Forest. Of this 126,071 acres have been surveyed and initially worked leaving 5,929 acres unsurveyed. Since the Forest is acquiring lands continually within the boundaries of the purchase unit, the acreage of white pine and control area is bound to increase. Records of each pine area were formerly made on the White Pine Record Sheet (BR 86). This had been superseded by the Preeradication Survey (AP-1) and the Ribes Eradication Report (AP-a). The data for each area was summarized by counties on Form EQ 192, Pine Ledger Permanent Control Records (AP-14). For safety the records are filed in the district agent's office, the State Leader's Office at Harrisonburg, and the Regional headquarters in Richmond. Copies of the Summaries as well as the State Leaders Annual Reports are filed also with the Forest Supervisor at Harrisonburg.

## White Pine

The latest estimate of white-pine-bearing land in the George Washington National Forest in Virginia is 56,000 acres. Through 1940, 54,817 acres of white pine had been initially protected. White pine grows well in all sections of the Forest, its lowest elevation being around 500 feet, which is lower than ribes grow. There is considerable ribes-free acreage on the Forest which could grow white pine.

## Ribes

There are only two species of native wild ribes, cynosbati and rotundifolium, in the Forest, although americanum has been found abandoned in several locations. The americanum became naturalized on Shenandoah Mountain at an elevation of 4,000 feet. Ribes are found on a much higher per cent of the land in the Dry River and Deerfield Districts than in the Lee and Pedlar Ranger Districts. Ribes population varies from one or two to several hundred per acre. For the whole Forest from 1928 through 1941, the average number of bushes pulled per acre was 9.3.

## Ribes Eradication

In 1941 initial work was continued in Augusta and Highland counties in both the Deerfield and Dry River Ranger Districts, while rework was done in August, and Highland counties in the Deerfield District, and in Augusta, Highland and Rockingham counties in the Dry River District.



# RIBES ERADICATION IN 1941

Working	Acre Worked	Ribes Destroyed	Hour Man Days Labor	Average No. Ribes Per A.	Average No. A. Per Man Day	Cost
First	9854	88,889	797	9.16	12.11	\$1955.00
Subsequent	9048	194,439	1301	14.88	8.95	2967.70
TOTAL	18702	283,328	2098	11.94	8.51	4922.70

Cost does not include supervision or clerical assistance.  
 1- Cost of work per acre-initial ribes rework--85¢.

It has been the practice so far as possible to rework an area once every 3 years, and oftener if possible where ribes regrowth was heavy.

For the purpose of comparing 1940 work with that of earlier years, the records for last 5 years are compiled and tabulated here.

## RIBES ERADICATION GEORGE WASHINGTON NATIONAL FOREST IN VIRGINIA 1937 to 1941 INCLUSIVE

### First Working

Year	Acre Worked	Ribes Destroyed	Hour Man Days	Average No. Ribes Per A.	Average No. Acre Per Man Day	Cost
1937	13,758	99,789	1,826	7.13	8.46	\$2047.75
1938	21,773	336,786	3,712	11.80	7.75	6084.58
1939	13,630	250,090	2,327	18.34	5.86	4471.46
1940	36,396	311,291	1,939	8.79	18.25	2176.11
1941	9,854	88,889	797	9.16	12.11	1955.00
Total	101,211	1080,678	10,401	11.07	9.73	19427.50

### Subsequent Working

Year	Acre Worked	Ribes Destroyed	Hour Man Days	Average No. Ribes Per A.	Average No. Acre Per Man Day	Cost
1937	6,900	41,850	1,117	6.06	6.18	\$1719.00
1938	11,700	87,463	1,370	11.10	3.77	\$136.00
1939	1,078	163,810	2,122	23.53	3.24	\$128.00
1940	11,825	115,002	1,578	9.71	7.50	\$825.00
1941	9,048	194,639	1,301	14.88	6.95	2967.70
Total	39,312	513,334	7,486	13.89	5.32	\$14706.60
Grand Total						
All Working	142,042	1593,857	17,887	11.30	7.88	\$34,134.10



### Blister Rust

The oldest infection on pine in Virginia, other than the one found on imported stock in Clark County in 1910 was found in North River, Augusta County in 1933, the Dry River District, cankers dating back to 1922. New infections were found in 1941 in Augusta County in Little River and Fiddley Hollow, the latter on pine, also in Shenandoah County at Woodstock Gap. In 1940 new infections on ribes were found in North County in Marshall and Lillards Drafter, and on pine in Highland County in Gwin Hollow and Sha's Ridge, and in Rockingham County in Skidmore Fork, Miller Springs Run and Sand Run. Infections are general in the Forest in Augusta, Highland and Rockingham counties, and damage is becoming more apparent each year. In 1941 the percent of pine infection on four treated areas, with 304 acres, in Augusta, Highland and Rockingham counties was 18.3; the per cent of infection ranging from 7.9 to 30.3.

### Canker Elimination

In 1941 the elimination of blister rust cankers on pine was continued in Jerrys Run, and on Shenandoah Mountain in Augusta and Highland counties, and in Mongold and Snake Hollows in Rockingham County. All of the work was initial. Small crews up to six men were employed, running their strips between spring lines. Each tree was examined by two men working opposite each other. A total of 21,514 trees was examined on 304 acres. 5073 trees or 18.3 per cent were found infected; of these 1073 were so badly infected they were cut down, and 3200 were treated by removal of cankers. 47,741 branch cankers and 352 stem cankers were removed, making an average of 15 cankers per infected tree. The per cent of infection on the four areas ranged from 7.9 in Snake Hollow, Rockingham County to 30.3 on Shenandoah Mountain in Highland County.

Canker elimination has gone hand in hand with ribes removal. In 1941 canker elimination cost \$1.58 per acre in contrast to 66¢ per acre in 1940.

From 1937, when canker elimination began on the George Washington, through 1941, a total of 3872 acres had been examined, of which initial average was 2973, and rework 999. A total of 510,776 trees were examined, of which 4590 badly infected ones were removed and 13,540 pruned. 4.4 per cent of all pines examined were infected. 132,692 branch cankers and 3081 stem cankers were removed at an expenditure of \$3930.73 for 2526 days of labor.

(Note: This cost seems too low for a average but \$1.94 per day or 24¢ per hour, but figures are from Mr. Luce's 1941 Annual Report.)

A total of 135,733 cankers was removed from a net acreage of 2979.

### Budget for Fiscal Year 1943

A budget calling for ribes eradication (removal) on 14,000 acres in Virginia, in fiscal year 1943 was presented to the Regional Forester, Mr. Evans in May 1942. A list of ribes-bearing areas needing working was submitted with the budget, only areas worked last in 1938 or earlier, being included. The total estimated cost was \$19,500.00. In account of the prevalence of the blister rust in the forest it is hoped that the budget will be approved.



## GEORGE WASHINGTON NATIONAL FOREST

Introduction

Blister rust control began on the Forest in 1933, with CCC men and has continued through 1941 with different project funds, particularly WPA.

Surveys and Records

(1)

Pine surveys have been completed on the Forest, a total of 21,133 acres of pine were surveyed with a control area (including pine) of 48,417 acres. Practically all of this pine runs better than 50 trees per acre.

White pine record sheets have been compiled for each pine area and are filed in Marlinton, W. Va. at State Leaders Office and at regional headquarters at Richmond, Va. Permanent Control Records are being made up in Marlinton.

Ribes

Native gooseberries in the National Forest are cynosbati and rotundifolium. There are no native currants in the area on pine-growing land although skunk currants are found at the summit of Spruce Knob. Native ribes are not found in every pine lot. None were found in Hampshire County in the Forest in 1941, on 1,000 acres. In Hardy County, out of 9,693 acres of control area, ribes-bearing land represent but 3,743 acres or 38.6 per cent. In Pendleton County of initial acreage worked in '39 and '40, 10,630 acres out of 18,125 acres were ribes-bearing, i.e. 58.6 per cent. Of acreage reworked in Pendleton County in '39 and '40, 6,349 out of 11,701 acres or 53.8 per cent were ribes-bearing. In Hardy County ribes averaged 14 per acre on the ribes-bearing lands initially worked.

Ribes Eradication

This work was carried on in 1941 in Hampshire and Hardy Counties. The following table gives results.

Ribes Eradication in 1941

County	White Pine Acreage	Control Acreage	Ribes Destroyed	Man Days	Cost
Hampshire	495	1,000	0	12	\$37.42
Hardy	115	478	12,156	75	233.84
Total	610	1,478	12,156	87	\$271.26

(1) Through error this was listed as 21,123 acres in annual statistical table 5A, Sheet 9.



In 1941, 11,396 acres of land were worked in Hardy County, 12,000 acres in Hampshire County, and 16,225 acres in Pendleton County. In Hardy County, 12,000 acres were pine-free, and only 10 acres were ribes-bearing. In Hampshire County, 11,396 acres were located on Casper Springs and Hawes Run, while in Pendleton County the pine stands were found at the head of Lower Cove Run. The ribes area was in this latter Run.

#### DATA ON RIBES ERADICATION 1933 to 1941 incl.

County Initial working	White Pine Acreage	Control Acreage	Ribes Destroyed	Man Days	Cost
Hampshire	495	1,000	-----	12	\$ 37.42
Hardy	4,413	9,693	52,512	570	1,746.34
Pendleton	16,225	37,724	452,499	3,956	9,444.20
Totals	21,133	48,417	505,011	4,538	\$11,227.96
<u>Second Working</u>					
Pendleton	-----	18,784	79,036	\$634	1,500.00
Both Workings	-----	-----	-----	-----	-----
Totals	21,133	67,201	584,047	5,172	\$13,013.96

Considering the surveys and eradication only of the last three years 1939, 1940, and 1941 when a distinction was made between block-out acreage and ribes-bearing lands, we find 23,886 acres to be ribes-free out of a total of 38,315 acres. Of the 15,602 acres not covered in these three years, some acreage is probably also ribes-free.

#### Blister Rust

The blister rust is present in the Forest in Hardy County, it having been found in Dunkerson Gap, and on ribes and pine on Schoolhouse Run near Lost River P. O. in 1940 and on both ribes and pine on Trout Run, and in Caplinger Hollow previously.

In Pendleton County infections have been found on ribes and pine in Rough Run, in the vicinity of Cow Knob, Bother Knob and Reddish Knob, and at the head of Hawes Run. No late estimates of the per cent of pine infected have been made.

Canker Elimination - None

#### Budget for 1945 - 44

Since all ribes-bearing lands were worked last in 1939 or later, no budget was submitted to the Regional Forester in May 1942. A budget of \$9,101.00 to rework 11,396 acres of land in Fiscal year 1944 was submitted to the Washington Office of this Division.

# MONONGAHELA NATIONAL FOREST

## Introduction

Blister rust control began in 1936, initial survey and eradication being completed in Greenbrier and Pocahontas counties in 1938. Some surveys have been carried on in Tucker County; but scouting for pine needs to be carried on in Preston, Tucker and Randolph Counties.

## Surveys and Records

No surveys were carried on in 1941. Prior to 1941 surveys showed about 29,000 acres of white pine with a control acreage estimated at 80,000 acres. Of this acreage 75,694 acres of control area and 27,256 acres of worthwhile white pine have been mapped. Records of each pine area are kept both in Marlinton, W. Va., and Richmond, Va., Offices. Permanent Control Records are being made in Marlinton.

## White Pine Plantations:

Data is at hand on plantations as follows.

County	Location	Acreage of Plantation	Date of Plantation	Date Last Worked	Ribes Rem- Last Time**
Greenbrier	Anthony Creek (near Wiley Crossing)	15	1939	1937	715
"	Anthony Creek " The Dock "	12	1937	1937	487
"	Slabcamp Run	40	1939	1938	205
Pocahontas	Knapps Creek at Spice Run	2	1937	1937	49,843
	near Rimel, on Cochran Creek	?	?	1936) 1939)	167
"	Clote Run	70	?	1938	0

\*Ribes were pulled in area covering not only Forest Service plantation but adjoining private land.

## Ribes

The two wild gooseberries cynosbati and retundifolium are the species most commonly found. One small area of skunk currants has been located, in Pocahontas County on Cochran's Creek.

Americanum is occasionally found, but this is usually an escaped bush. Wild ribes are not ubiquitous. In Pocahontas County of the 75 white pine areas 20 areas with 4,172 acres control area were ribes-free and six areas with 2,243 acres control area had less than eleven bushes each. The 55 ribes-bearing areas had an acreage necessary to work of only 6,422 out of 21,775. Summing up Pocahontas County pine areas of the 31,666 acres worked, 19,768 acres seem to be ribes-free, while 11,898 acres are classed as ribes-bearing.



In Greenbrier County of 58,007 acres, with a total area of 58,007 acres only 5,455 have been cleared as ribes-bearing and 78,152 as ribes-free. In addition there are 14 areas with 3,137 acres which are ribes-free.

#### Ribes-free and Ribes-bearing Acreage

County	Ribes-free	Ribes-bearing	Total
Greenbrier	36,349	11,071	47,420
Pocahontas	19,708	11,898	31,666
Total	56,057	22,969	79,086

These figures while not entirely accurate are indicative of the fact that ribes-bearing lands occupy not over 30 per cent of the total control area.

#### Ribes Eradication

In 1941, 132 acres on Buffalo and Lambs Run in the vicinity of Boyer, Pocahontas County were reworked, 1,094 ribes being removed in 28 man days at a cost of \$92.20 or 70¢ per acre.

#### Ribes Eradication 1918 - 1941 incl., by Working

Working	Acreage Worked	No. Ribes Destroyed	No. 8 hr. Man days	Total Cost
Initial	75,694	324,655	3,533	
Rework	3,831	52,273	252	
Total	79,525	376,928	3,785	\$11,212.78

The average number of ribes per acre is 4.74 in contrast to 9.39 on the George Washington National Forest in West Virginia. Man days per acre equal .043. Cost per acre was \$0.141.

Chart on next page

Ribes Eradication 1935 - 42 by Counties

County	Acreage Pine Protected	Acreage Worked	No Ribes Destroyed	Man Days	Cost
Greenbrier	14,799	47,420	143,194	1,354	\$ 4,866.71
Pocahontas	12,347	31,666	227,632	2,380	6,128.47
Tucker	104	439	6,052	51	217.00
<b>Total</b>	<b>27,250</b>	<b>79,525</b>	<b>376,928</b>	<b>3,785</b>	<b>\$11,212.18</b>

Ribes per acre

Greenbrier	3.0	Note: As one proceeded north from Greenbrier, through Pocahontas to Tucker County the average number of bushes per acre increased.
Pocahontas	7.2	
Tucker	13.7	

The last eradication on over 12,316 acres was carried on in 1936, 1937, or 1938, hence there is a great need now of reworking these areas, since there is a comeback of ribes on most areas.

Blister Rust

While rust has been found on pine in the counties in which the Monongahela Forest is located, the blister rust has not to my knowledge been found on pine within the Forest except in Tucker County, at the Horseshoe Camp Recreational Area on one pine in 1939. It has also been located within a half mile of the Forest nursery at Parsons on ribes, and at two places in Greenbrier County on Ribes.

Since there was a widespread infection in 1935 in eastern counties of West Virginia, the rust undoubtedly will be found within the Forest in Pocahontas County, when eradication work is carried on there or a special survey made to locate the disease.

Canker Elimination - None

Nursery Sanitation

At Parsons in Tucker County, nursery sanitation has been carried on since 1939. In 1941 the work was carried on by R. G. Pennington assisted by one helper on the river cliffs, between April 15, and May 23. 633 acres were covered and 503 ribes destroyed at a cost of \$ 130.40 borne by the Forest Service. Work took 31 days of labor. For several years less than one bush per acre has been destroyed but it is only this annual recurrence of control work which has held the ribes population down and has prevented rust infection in the nursery. In 1935 the rust was present within a half mile of the nursery on ribes.



Budget for Fiscal Year 1943

In May 1942, a budget and work plan was made and presented to the Regional Forester, Mr. R. M. Evans in Philadelphia, and to Forest Supervisor A.A. Wood, both of whom approved it. This called for the working of 12,310 acres at an expenditure of \$9,307.00. The work plan included a list of areas with acreage and a map showing their location; 26 of which were last worked in 1936, 61 last worked in '37, and 14 in '38. With decreased funds from WPA and CCC there will probably be insufficient funds for the Bureau to carry on control work on the Forest except on intermingled private and Forest lands; hence the appeal to the Forest Service.

## NATIONAL FORESTS

Region 8 - States of Georgia, North Carolina and Tennessee

TENNESSEE

### CHEROKEE NATIONAL FOREST

#### Introduction

Elster rust control began in 1933 on the former Unicoi, Pisgah and Cherokee National Forests, and has continued each year with the exception of 1935, either by the Forest Service or the Bureau or both agencies with CCC or WPA funds.

#### Surveys and Records

Pine surveys have been completed in all counties except Monroe and Polk in the southern part of the State. These lands should be surveyed within the next two years to determine how much pine there is and its location, and the distribution of ribes. The completed counties are Carter, Cooke, Greene, Johnson, Sullivan, and Unicoi. Records of each pine area are kept in the office of the State Leader, Mr. R. D. Taborley in the Federal Building, at Knoxville, Tennessee, and in the Regional office at Richmond, Va. Permanent Control Records are being compiled at Knoxville, duplicates of which will later be filed in Richmond. Surveys indicate about 105,000 acres of white pine and 245,000 acres of control area, (including blue pine) in the Forest. Of this, 231,134 acres have been worked initially.

#### Pine

Native white pine grows very well in Tennessee, height growth in one year running up to four feet in exceptional cases. Practically all plantations have been protected. Records are available of white pine plantations in Carter, Cooke, Greene, Johnson, Sullivan, and Unicoi counties in the Cherokee National Forest. Ribes were found in only one plantation on Tiger Creek in Carter County, at 2,200 feet elevation. This area was first worked by the CCC in 1937 and "scooped-up" by WPA men in 1938, a total of 78,025 ribes being destroyed. All other plantations made through 1939, were worked without finding any ribes. There is an excellent opportunity for increasing the white pine acreage in the Forest by planting on ribes-free areas.

#### Ribes

The two principal species of Ribes are synanthrum and rotundifolium. Shunk currants however have been found in abundance in Gentry Creek in Johnson County and on Cold Spring Mt. in Greene County and in a few other locations. Wild black currants probably naturalized have been located in numerous places in the north eastern counties. The general range of the wild gooseberry is from 1500 or 2000 feet to the mountain tops, whose elevations range from 4,000 to 6,000 feet. Shunk currants are rarely found below 3,000 feet elevation. Americana in Unicoi County ranged from 1000 to 2500 feet. The highest elevation yet noted for this species is 2400 feet on Rocky Fork. Elvas curvatum should probably be found in Polk County if not in Monroe, since it is in the adjoining county of Murray in Georgia and across the valley in the Cumberland Plateau counties of Hamilton at 1,200 feet elevation, and in Phea and Elades at 2,000 feet.



While ribes are abundant in the Forest, the majority of pine areas in the Forest on adjacent state and private lands are ribes-free. It is roughly estimated that ribes-bearing lands within the Forest amount to but 26,000 acres. This acreage may be sharply reduced when each individual pine area bearing ribes is reworked and the "block-out" acreage determined and thrown out. On the other hand when Monroe and Polk Counties have been surveyed this estimate may increase. Purchases of private lands may also increase this acreage. Granting that 26,000 acres is approximately correct this would leave about 200,000 acres of control area ribes-free in the Forest.

### Ribes Eradication

In the early years the eradication was carried on only by CCC; without securing many ribes except in '33. Since 1935, most of the ribes eradication has been done by trained crews working under agents employed by the Bureau or by the Bureau and State cooperatively. In 1941, 30,126 acres were covered, some 20,900 acres on a resurvey which yielded no bushes, but on 9,142 acres some 21,370 ribes were pulled. The following table gives the data in detail.

#### Ribes Eradication in 1941

Working	Acreage Worked	Ribes Destroyed	No. 8 hr. Man days	Cost
Initial	9,142	21,370	376	
Rework	20,984	0	182	
Total	30,126	21,370	558	\$1626.18

Per acre figures are as follows:

No. Ribes 0.71; man days 0.018; cost 5.4¢. Cost per man day 2.91.

The control work was concluded in Washington County in January, and was carried on from March to June in Sullivan County by Agent Lane, and in Cocke County from January through July by Agent Stegall. Ribes were found only in Cocke County in one area of 35 acres. That leaves 30,033 acres which are ribes-free. The following table gives cumulative data on eradication.

#### Ribes Eradication 1933 to 1941 incl.

Working	Acreage Worked	Ribes Destroyed	No. 8-hr. Man days
Initial	221,134	1711,152	10,927
Rework	22,116	4,750	227
Total	243,250	1715,902	11,154

### Ribes Quest

No ribes has been found on Forest land, but it has been found within a few miles of the Forest in Johnson and Carter Counties near the North Carolina state line.

### Budget for 1943

A budget and work plan were prepared in May 1942 and submitted to the Regional Forester. The work plan called for 2,175 acres to be worked, at a cost of \$2,263.00. Only those pine areas were included which had been worked last in 1938 or earlier, and from which ribes were removed. Ribes-bearing areas should be worked once in 5 years if possible, in order to keep the ribes population down and to prevent seed production.



## PISGAH NATIONAL FOREST

Introduction

Blister Rust Control began in 1933, two checkers working out of various CCC Camps in the Pisgah and Nantahala Forests. Work has been continued in each year since, except 1935; in early years by CCC men and in later years by the WPA.

Surveys and Records

Pine surveys have been completed within the Forest. These surveys show a control acreage of 131,197 including 32,264 acres of white pine. Records of each pine area are filed in both Asheville, N. C. and Richmond, Va. offices of the Division. Permanent control records, by counties, are being prepared in Asheville.

White Pine and Ribes

White pines form excellent stands and growth is fairly rapid in the Pisgah National Forest except at high elevations. Agent Martin Nesbitt in his report on Caldwell County of July 18, 1938 wrote, "According to recent checks made in Pisgah National Forest, plantings showed that white pine grew faster than any other type of tree in the plantings." Most of the white pine is found on the Grandfather Division of the Pisgah. There is an excellent opportunity to increase the white pine stands of the Forest without increasing the expenditure of blister rust control funds, by choosing ribes-free sites. Wild ribes have been found in pine-bearing areas only in the counties of Ashe, Haywood, Madison, ~~McDowell~~, Mitchell, Watauga, and Yancey, and at only a few places of high elevation in Buncombe County. Not all areas in these counties bear ribes. White pines grow at lower elevations than native ribes, being found in the State below 1,000 feet elevation, while ribes are seldom found below 3,000 feet elevation. 2,500 feet seems to be the lower limit for ribes except at one locality, Pigeon River, below the Waterville Dam in Haywood County, where they are located at 1,900 feet. At the upper limits there are few stands of white pine above 4,000 feet while ribes grow abundantly clear to the mountain tops at 6,720 feet. All plantations of white pine on the National Forest have been worked, and where present ribes eradicated, except one at Pisgah Forest, N. C. in a "block-out" area. This area will be inspected soon for cultivated ribes. The principal species of ribes are the two gooseberries cynosbati and rotundifolium. Skunk currants have been found in one locality in the pine belt.

Ribes Eradication

In 1941 most of the ribes eradication on the Forest was rework, although a few bushes were destroyed in initial work. The following tables give the results of 1941 work.

Ribes Eradication on Pisgah National Forest - 1941

Working	Acreage worked	No. Ribes Destroyed	No. 8-hour Man-days	Cost
Initial	-	147	37	
Rework	3532	166,830	1,755	
Total	3532	166,977	1,792	\$4,730.88



## CHATTAHOOCHEE NATIONAL FOREST

Introduction

Blister rust control began in the Chattahoochee National Forest in 1933 and 1934. An agent was employed by the Forest Service who scouted with two CCC men some 14,754 acres, destroying 235 cultivated currants at an expenditure of 51 days labor. The location of wild ribes in the Forest was not known by anyone until late in 1934 or early in 1935 when Ranger Bryant of the Forest Service discovered them in one locality and reported them to State Leader W. V. Zimmer. Beginning 1935 through 1939, from 301,520 to 1,542,986 wild bushes were destroyed each year by our Bureau with WPA project funds. The area worked each year varied from 125,976 acres in 1935 to 23,480 in 1939. In 1940 and 1941 about 48,000 acres were worked each year, but much of the acreage was ribes-free, only 7,442 and 4,710 ribes respectively, being found in these two years.

Surveys and Records

In early years surveys were made by the traverse method. Later, systematic grid maps have been made, the land being surveyed in mile square grids, corners being tied in to permanent U. S. Geological Survey bench marks and Forest Service corners. The whole northern section of the State embracing the white-pine-growing counties has been laid off in blocks most of which are 8 miles long (east and west) by 6 miles wide (north and south). Each block consists of 48 mile-square grids. Maps are made in two sizes-8 inches to the mile for the grids, and 2 inches to the mile for the blocks. Copies of these maps and records pertaining to the grids are filed in the Dahlonga, Georgia and Richmond, Va. offices of the Division of Plant Disease Control. Surveys show approximately 281,000 acres of white pine in the Forest and a control acreage (including the pine) of 465,000 acres.

White Pine and Ribes

White pines are found in all of the counties in the Forest except Dawson, being present in Fannin, Gilmer, Habersham, Lumpkin, Murray, Rabun, Towns, Union, and White. Some of the finest stands of young pine in the Southern Appalachian States are found in Rabun County in the Chattahoochee National Forest. Wild ribes are not found in the pine stands in all of the nine counties just mentioned, but so far only in Fannin, Gilmer, Murray, Towns, and Union. Even in these five counties the range of white pine and of ribes do not always coincide. The wild ribes species in Georgia are three, and in the Forest are found as follows: curvatum only in Gilmer and Murray counties from 1,200 feet to 2,832 feet elevation; and cynosbati and rotundifolium in the five counties mentioned above, between 2,000 and 4,300 feet. These two latter species are found mostly on the northern slopes on rocky coves.

There are therefore numerous and large areas free of wild ribes which are excellent white pine sites, and where planting could be done with profit. Cultivated ribes have also been found on the Forest in large numbers. Through 1940, 121,920 cultivated bushes were destroyed in the Chattahoochee. These bushes were not in a state of cultivation when destroyed, but were planted bushes which had been abandoned or progeny of such planted bushes. In white pine counties of the State, counting both Federal, State, and privately-owned lands, rotundifolium represented 95 per cent of all cultivated bushes; red currants 3.2 per cent, americanum 1.8 per cent. They are the real menace to white pine at low elevations, since the native wild ribes grow at higher elevations. These escaped or abandoned cultivated bushes are found in patches sometimes at one location numbering as many as 522, which in Fannin County was the average number of americanum found at five places. The data on local control is given in the table on the following page.



Included in the 1941 control work was the inspection of 1941 white pine plantations in McDowell, Mitchell, and Yancey counties. The Mitchell and Yancey County plantations were ribes-free. The McDowell County plantations were in Armstrong and Toms Creek. 121 native cynosbati were pulled in one of these ~~McDowell~~ <sup>Mitchell</sup> County plantations with 5,246 feet of live stem. Ribes eradication in the Pisgah was carried on in the following Ranger Districts.

French Broad Ranger District	-	Madison County
Grandfather	" "	Avery County
Mt. Mitchell	" "	Mitchell and Yancey Counties
Pisgah	" "	Haywood County

Cumulative figures on all control work in the Forest to date are shown below.

Ribes Eradication on Pisgah National Forest 1933-1941 incl.

Working	Acreage Worked	No. Ribes Destroyed	No. 8-hour Man-days	Per Acre	
				Ribes	Man-days
Initial	131,197	220,571	3,210	1.6	.024
Rework	149,916	340,668	8,182	2.3	.054
Total	281,113	561,239	11,392	2.0	.04

Blister Rust

While the blister rust was found on ribes in 1941 in four counties, Ashe, Avery, McDowell, and Watauga, for the first time, it was not found to my knowledge within the National Forest. It was located, however, on Grandfather Mountain only a few miles from the Forest.

Budget for Fiscal Year 1943

A budget and a work plan for the fiscal year 1943 were prepared and presented to the Regional Forester at Atlanta in May 1942 for consideration. These were accompanied by maps showing the location of areas to be worked. The plan called for working 6,150 acres at an expenditure of \$5,600.00

RIBES GRADIENTION - 1941  
(continued)

Ribes gradation - 1941

Working	Acreage Worked	No. Ribes Destroyed	No. Man- Days	Cost
Initial	48,717	4,710	802	\$7,947.70
Rework	-	-	-	-
Total	48,717	4,710	802	\$7,947.70

In 1941 as is to be seen from the above table, all gradation was initial and most of the areas were ribes-free. The cost per acre amounted to 89¢; the number of acres worked per day was 55.7. Cumulative data on all gradation from 1933 through 1941 is found in the following table:

Ribes Gradation - 1933 to 1941, Incl.

Working	Acreage Worked	No. Ribes Destroyed	No. Man- Days	Cost per Acre	
				Ribes	Man-Days
Initial	459,831	4,834,723	17,867	4.2	.038
Rework	1,250	42,754	351	22.6	.42
Total	461,081	4,877,477	18,218	9.8	.40

Blister Rust

None reported in the zone.

Budget for Fiscal Year 1942

A budget and work plan for the fiscal year 1942 was prepared and presented to the Regional Forester at Atlanta in May 1942 for consideration. Maps of the Forest showing the areas to be worked accompanied the budget. The plan called for working 5824 acres at a cost of \$24888.00. Practically all of the work called for was rework.





TABLE #1  
(Sheet #1)  
SUMMARY OF 1941 RIBES ERADICATION

State	Initial Eradication Work				Reeradication Work				Totals				Per Cent.
	Acre- age		Number 8-hour		Number 8-hour		Number 8-hour		Acre- age		Number 8-hour		
	Worked	Wild	Destroyed	Cult.	Worked	Wild	Destroyed	Cult.	Worked	Wild	Destroyed	Cult.	
GA.	116,122	1,769	12,354	1,101	234	1,049	-	217	115,356	2,788	12,354	1,316	12.1
MD.	916	21,146	-	362	7,770	35,085	176	1,569	8,685	57,231	176	1,631	1.6
R. C.	79	8,040	1,319	241	23,900	342,173	3,438	4,606	24,039	348,221	4,757	4,847	6.0
Tenn.	327,093	35,513	20,516	3,517	14,201	-	-	342	271,284	35,513	20,516	2,959	20.6
W. Va.	16,084	123,840	229	1,230	25,846	894,125	3,071	5,548	39,750	517,471	3,300	4,776	8.2
TOTAL	116,734	679,140	7,657	6,271	57,044	405,907	105	4,229	156,778	1066,066	2,765	9,190	14.34
TOTAL	479,017	666,043	37,076	10,422	135,866	1,170,359	6,791	14,501	615,872	2,947,230	43,805	24,922	8.78

TABLE #1 (Sheet #2)  
SUMMARY OF 1941 RIBES ERADICATION

State	Payroll Per Acre				Man-Days				Number of Corps				Total
	Initial	Re-erad.	Initial	Final	Initial	Final	Initial	Final	Reg.	Sup.	Ref.	Total	
	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	Per Acre	
GA.	.12	4.6	.009	.38	-	-	-	-	-	-	-	42	42
MD.	28.10	4.7	.38	.20	3	-	-	3	-	-	-	84	98
R. C.	33.	15.	.6.	.19	-	-	-	-	-	-	-	66	70
Tenn.	.25	-	.011	.007	-	-	-	-	-	-	-	46	48
W. Va.	7.70	16.8	.077	.15	-	-	-	-	-	-	-	54	88
	5.70	11.	.042	.118	1	-	-	1	-	-	3	108	113
TOTAL	1.29	8.67	.022	.106	4	-	-	4	-	-	5	420	441

Number 8-hour man-days hours worked per day x number men

Percentage of total white place control acreage in State that was worked initially during 1941.

Enter the maximum no. of persons on payroll at peak of season. Total no. persons employed not desired because the large turnover in WPA camps would result in an exaggerated figure.





TABLE #2 (Sheet #1)  
SUMMARY OF 1941 RIBES ERADICATION BY PROGRAMS  
(Including all work - Initial and Reeradication)

State	Total Acreage Worked	Regular and Cooperative*				WPA and ERA			
		Acreage Worked	No. Ribes Destroyed	Number 8-hour Man-Days	Acreage Worked	No. Ribes Destroyed	Number 8-hour Man-Days	Acreage Worked	No. Ribes Destroyed
Ga.	115,356	4,287	-	42	111,069	2,783	12,312	1,275	1,275
Md.	0,686	-	-	-	2,475	15,588	172	822	822
N. C.	24,039	56	-	2	24,033	349,221	4,755	4,844	4,844
Tenn.	271,284	-	-	-	271,284	35,613	20,515	2,859	2,859
Va.	39,730	24	527	-	39,736	515,904	3,300	4,718	4,718
W. Va.	156,778	5,937	14,252	243	145,846	1,054,007	4,211	9,571	9,571
TOTAL	615,872	13,534	14,779	287	594,899	1,372,371	42,266	28,992	28,992

\* Includes work done with "Ten" funds.

TABLE #2 (Sheet #2)  
SUMMARY OF 1941 RIBES ERADICATION BY PROGRAMS  
(Including all work - Initial and Reeradication)

State	Total Acreage Worked	Regular and Cooperative*				WPA and ERA			
		Acreage Worked	No. Ribes Destroyed	Number 8-hour Man-Days	Acreage Worked	No. Ribes Destroyed	Number 8-hour Man-Days	Acreage Worked	No. Ribes Destroyed
Ga.	115,356	4,287	-	42	111,069	2,783	12,312	1,275	1,275
Md.	0,686	-	-	-	2,475	15,588	172	822	822
N. C.	24,039	56	-	2	24,033	349,221	4,755	4,844	4,844
Tenn.	271,284	-	-	-	271,284	35,613	20,515	2,859	2,859
Va.	39,730	24	527	-	39,736	515,904	3,300	4,718	4,718
W. Va.	156,778	5,937	14,252	243	145,846	1,054,007	4,211	9,571	9,571
TOTAL	615,872	13,534	14,779	287	594,899	1,372,371	42,266	28,992	28,992





TABLE #3 (Sheet #1)  
SUMMARY OF ALL OTHER CONTROL WORK FOR 1941

CULTIVATED BLACK CURRANT ERADICATION :												NURSERY SANITATION					PREERADICATION SURVEY :																
State	No. Inspected	No. locations	No. Found	No. Black Currants Destroyed	No. S-hr	Man	No.	No. W. P.	No. in Nurseries	No. Acres	Destroyed	Man	Days	Wild	Cult	Days	Man	Days	Man	Days	No. S-hr	No. Acres	No. S-hr	Man	Days	Man	Days	No. S-hr	No. Acres	No. S-hr	Man	Days	
Pa.	-	-	-	-	-	-	-	-	215,000	1,160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Va.	-	-	-	-	-	-	2	-	4,125	40	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S. C.	-	-	-	-	-	-	1	-	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tenn.	-	-	-	-	-	-	8	-	363,232	1,560	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
W. Va.	-	-	-	-	-	-	1	-	288,000	657	501	2	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	-	-	-	-	-	-	12	-	980,357	3,417	673	5	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(1) Prof. Gordon Bentley inspected 14 nurseries in Tennessee having 819,090 white pine  
(2) In addition 47,798 acres of old lands were remapped.  
(3) In addition 5,058 man days were expended removing old lands by the grid system.

TABLE #3 (Sheet #2)  
SUMMARY OF ALL OTHER CONTROL WORK FOR 1941

CULTIVATED BLACK CURRANT ERADICATION :										NURSERY SANITATION										PREERADICATION SURVEY :									
State	No. Inspected	No. Trees Examined	No. Trees Destroyed	No. Trees Removed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	No. Trees Removed & Destroyed	
Pa.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S. C.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tenn.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Va.	27,614	3,200	1,873	47,993	180	5464.91	1869.75	4762.05	1056	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	
W. Va.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	27,614	3,200	1,873	47,993	180	5464.91	1869.75	4762.05	1056	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	591.50	1714.56	

(1) Man days may have been charged to preeradication survey.





TABLE #4 (Sheet #1)  
SUMMARY OF EXPENDITURES FOR 1941

TABLE IV (Sheet #2)





# TABLE No. 1 (Sheet 1)

STATE OF NEW YORK

LAWYERS	INITIAL INVESTIGATION				RECOMMENDATION		TOTAL
	Accepted	Not Accepted	Not Accepted	Not Accepted	Not Accepted	Not Accepted	
1. JAMES J. ...	...	...	...	...	...	...	...
2. ...	...	...	...	...	...	...	...
3. ...	...	...	...	...	...	...	...
4. ...	...	...	...	...	...	...	...
5. ...	...	...	...	...	...	...	...
6. ...	...	...	...	...	...	...	...
7. ...	...	...	...	...	...	...	...
8. ...	...	...	...	...	...	...	...
9. ...	...	...	...	...	...	...	...
10. ...	...	...	...	...	...	...	...
11. ...	...	...	...	...	...	...	...
12. ...	...	...	...	...	...	...	...
13. ...	...	...	...	...	...	...	...
14. ...	...	...	...	...	...	...	...
15. ...	...	...	...	...	...	...	...
16. ...	...	...	...	...	...	...	...
17. ...	...	...	...	...	...	...	...
18. ...	...	...	...	...	...	...	...
19. ...	...	...	...	...	...	...	...
20. ...	...	...	...	...	...	...	...
21. ...	...	...	...	...	...	...	...
22. ...	...	...	...	...	...	...	...
23. ...	...	...	...	...	...	...	...
24. ...	...	...	...	...	...	...	...
25. ...	...	...	...	...	...	...	...
26. ...	...	...	...	...	...	...	...
27. ...	...	...	...	...	...	...	...
28. ...	...	...	...	...	...	...	...
29. ...	...	...	...	...	...	...	...
30. ...	...	...	...	...	...	...	...
31. ...	...	...	...	...	...	...	...
32. ...	...	...	...	...	...	...	...
33. ...	...	...	...	...	...	...	...
34. ...	...	...	...	...	...	...	...
35. ...	...	...	...	...	...	...	...
36. ...	...	...	...	...	...	...	...
37. ...	...	...	...	...	...	...	...
38. ...	...	...	...	...	...	...	...
39. ...	...	...	...	...	...	...	...
40. ...	...	...	...	...	...	...	...
41. ...	...	...	...	...	...	...	...
42. ...	...	...	...	...	...	...	...
43. ...	...	...	...	...	...	...	...
44. ...	...	...	...	...	...	...	...
45. ...	...	...	...	...	...	...	...
46. ...	...	...	...	...	...	...	...
47. ...	...	...	...	...	...	...	...
48. ...	...	...	...	...	...	...	...
49. ...	...	...	...	...	...	...	...
50. ...	...	...	...	...	...	...	...
51. ...	...	...	...	...	...	...	...
52. ...	...	...	...	...	...	...	...
53. ...	...	...	...	...	...	...	...
54. ...	...	...	...	...	...	...	...
55. ...	...	...	...	...	...	...	...
56. ...	...	...	...	...	...	...	...
57. ...	...	...	...	...	...	...	...
58. ...	...	...	...	...	...	...	...
59. ...	...	...	...	...	...	...	...
60. ...	...	...	...	...	...	...	...
61. ...	...	...	...	...	...	...	...
62. ...	...	...	...	...	...	...	...
63. ...	...	...	...	...	...	...	...
64. ...	...	...	...	...	...	...	...
65. ...	...	...	...	...	...	...	...
66. ...	...	...	...	...	...	...	...
67. ...	...	...	...	...	...	...	...
68. ...	...	...	...	...	...	...	...
69. ...	...	...	...	...	...	...	...
70. ...	...	...	...	...	...	...	...
71. ...	...	...	...	...	...	...	...
72. ...	...	...	...	...	...	...	...
73. ...	...	...	...	...	...	...	...
74. ...	...	...	...	...	...	...	...
75. ...	...	...	...	...	...	...	...
76. ...	...	...	...	...	...	...	...
77. ...	...	...	...	...	...	...	...
78. ...	...	...	...	...	...	...	...
79. ...	...	...	...	...	...	...	...
80. ...	...	...	...	...	...	...	...
81. ...	...	...	...	...	...	...	...
82. ...	...	...	...	...	...	...	...
83. ...	...	...	...	...	...	...	...
84. ...	...	...	...	...	...	...	...
85. ...	...	...	...	...	...	...	...
86. ...	...	...	...	...	...	...	...
87. ...	...	...	...	...	...	...	...
88. ...	...	...	...	...	...	...	...
89. ...	...	...	...	...	...	...	...
90. ...	...	...	...	...	...	...	...
91. ...	...	...	...	...	...	...	...
92. ...	...	...	...	...	...	...	...
93. ...	...	...	...	...	...	...	...
94. ...	...	...	...	...	...	...	...
95. ...	...	...	...	...	...	...	...
96. ...	...	...	...	...	...	...	...
97. ...	...	...	...	...	...	...	...
98. ...	...	...	...	...	...	...	...
99. ...	...	...	...	...	...	...	...
100. ...	...	...	...	...	...	...	...

STATE OF NEW YORK

# TABLE No. 2 (Sheet 1)

LAWYERS	INITIAL INVESTIGATION				RECOMMENDATION		TOTAL
	Accepted	Not Accepted	Not Accepted	Not Accepted	Not Accepted	Not Accepted	
1. JAMES J. ...	...	...	...	...	...	...	...
2. ...	...	...	...	...	...	...	...
3. ...	...	...	...	...	...	...	...
4. ...	...	...	...	...	...	...	...
5. ...	...	...	...	...	...	...	...
6. ...	...	...	...	...	...	...	...
7. ...	...	...	...	...	...	...	...
8. ...	...	...	...	...	...	...	...
9. ...	...	...	...	...	...	...	...
10. ...	...	...	...	...	...	...	...
11. ...	...	...	...	...	...	...	...
12. ...	...	...	...	...	...	...	...
13. ...	...	...	...	...	...	...	...
14. ...	...	...	...	...	...	...	...
15. ...	...	...	...	...	...	...	...
16. ...	...	...	...	...	...	...	...
17. ...	...	...	...	...	...	...	...
18. ...	...	...	...	...	...	...	...
19. ...	...	...	...	...	...	...	...
20. ...	...	...	...	...	...	...	...
21. ...	...	...	...	...	...	...	...
22. ...	...	...	...	...	...	...	...
23. ...	...	...	...	...	...	...	...
24. ...	...	...	...	...	...	...	...
25. ...	...	...	...	...	...	...	...
26. ...	...	...	...	...	...	...	...
27. ...	...	...	...	...	...	...	...
28. ...	...	...	...	...	...	...	...
29. ...	...	...	...	...	...	...	...
30. ...	...	...	...	...	...	...	...
31. ...	...	...	...	...	...	...	...
32. ...	...	...	...	...	...	...	...
33. ...	...	...	...	...	...	...	...
34. ...	...	...	...	...	...	...	...
35. ...	...	...	...	...	...	...	...
36. ...	...	...	...	...	...	...	...
37. ...	...	...	...	...	...	...	...
38. ...	...	...	...	...	...	...	...
39. ...	...	...	...	...	...	...	...
40. ...	...	...	...	...	...	...	...
41. ...	...	...	...	...	...	...	...
42. ...	...	...	...	...	...	...	...
43. ...	...	...	...	...	...	...	...
44. ...	...	...	...	...	...	...	...
45. ...	...	...	...	...	...	...	...
46. ...	...	...	...	...	...	...	...
47. ...	...	...	...	...	...	...	...
48. ...	...	...	...	...	...	...	...
49. ...	...	...	...	...	...	...	...
50. ...	...	...	...	...	...	...	...
51. ...	...	...	...	...	...	...	...
52. ...	...	...	...	...	...	...	...
53. ...	...	...	...	...	...	...	...
54. ...	...	...	...	...	...	...	...
55. ...	...	...	...	...	...	...	...
56. ...	...	...	...	...	...	...	...
57. ...	...	...	...	...	...	...	...
58. ...	...	...	...	...	...	...	...
59. ...	...	...	...	...	...	...	...
60. ...	...	...	...	...	...	...	...
61. ...	...	...	...	...	...	...	...
62. ...	...	...	...	...	...	...	...
63. ...	...	...	...	...	...	...	...
64. ...	...	...	...	...	...	...	...
65. ...	...	...	...	...	...	...	...
66. ...	...	...	...	...	...	...	...
67. ...	...	...	...	...	...	...	...
68. ...	...	...	...	...	...	...	...
69. ...	...	...	...	...	...	...	...
70. ...	...	...	...	...	...	...	...
71. ...	...	...	...	...	...	...	...
72. ...	...	...	...	...	...	...	...
73. ...	...	...	...	...	...	...	...
74. ...	...	...	...	...	...	...	...
75. ...	...	...	...	...	...	...	...
76. ...	...	...	...	...	...	...	...
77. ...	...	...	...	...	...	...	...
78. ...	...	...	...	...	...	...	...
79. ...	...	...	...	...	...	...	...
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81. ...	...	...	...	...	...	...	...
82. ...	...	...	...	...	...	...	...
83. ...	...	...	...	...	...	...	...
84. ...	...	...	...	...	...	...	...
85. ...	...	...	...	...	...	...	...
86. ...	...	...	...	...	...	...	...
87. ...	...	...	...	...	...	...	...
88. ...	...	...	...	...	...	...	...
89. ...	...	...	...	...	...	...	...
90. ...	...	...	...	...	...	...	...
91. ...	...	...	...	...	...	...	...
92. ...	...	...	...	...	...	...	...
93. ...	...	...	...	...	...	...	...
94. ...	...	...	...	...	...	...	...
95. ...	...	...	...	...	...	...	...
96. ...	...	...	...	...	...	...	...
97. ...	...	...	...	...	...	...	...
98. ...	...	...	...	...	...	...	...
99. ...	...	...	...	...	...	...	...
100. ...	...	...	...	...	...	...	...

STATE OF NEW YORK

# TABLE No. 3 (Sheet 1)

LAWYERS	INITIAL INVESTIGATION				RECOMMENDATION		TOTAL
	Accepted	Not Accepted	Not Accepted	Not Accepted	Not Accepted	Not Accepted	
1. JAMES J. ...	...	...	...	...	...	...	...
2. ...	...	...	...	...	...	...	...
3. ...	...	...	...	...	...	...	...
4. ...	...	...	...	...	...	...	...
5. ...	...	...	...	...	...	...	...
6. ...	...	...	...	...	...	...	...
7. ...	...	...	...	...	...	...	...
8. ...	...	...	...	...	...	...	...
9. ...	...	...	...	...	...	...	...
10. ...	...	...	...	...	...	...	...
11. ...	...	...	...	...	...	...	...
12. ...	...	...	...	...	...	...	...
13. ...	...	...	...	...	...	...	...
14. ...	...	...	...	...	...	...	...
15. ...	...	...	...	...	...	...	...
16. ...	...	...	...	...	...	...	...
17. ...	...	...	...	...	...	...	...
18. ...	...	...	...	...	...	...	...
19. ...	...	...	...	...	...	...	...
20. ...	...	...	...	...	...	...	...
21. ...	...	...	...	...	...	...	...
22. ...	...	...	...	...	...	...	...
23. ...	...	...	...	...	...	...	...
24. ...	...	...	...	...	...	...	...
25. ...	...	...	...	...	...	...	...
26. ...	...	...	...	...	...	...	...
27. ...	...	...	...	...	...	...	...
28. ...	...	...	...	...	...	...	...
29. ...	...	...	...	...	...	...	...
30. ...	...	...	...	...	...	...	...





TABLE 15. (Sheet 15)  
SUMMARY OF RIBES REGENERATION ON NATIONAL FORESTS - 1941

NATIONAL FORESTS	TOTAL WORK		REGENERATION WORK		TOTALS	
	Acres	No. Ribes	Acres	No. Ribes	Acres	No. Ribes
Ala.	10,717	5,710	874	48,917	4,110	874
Ark.	2,143	21,540	37	3,532	165,977	1,792
Calif.	2,054	48,009	376	20,984	21,370	588
Colo.	1,873	15,155	797	3,048	13,533	1,307
Del.	-	-	88	-	1,478	13,156
Fla.	-	-	-	122	1,094	78
Grand Total	20,091	147,022	2,172	23,658	302,565	3,086
Grand Total	20,091	147,022	2,172	23,658	302,565	3,086

TABLE 16. (Sheet 16)  
SUMMARY OF RIBES REGENERATION 1941-1942 (Continued)

STATE	Acres	No. Ribes	Control Areas	No. Ribes	Total Acres	No. Ribes	Total Acres	No. Ribes	Total Acres
Ala.	10,717	5,710	874	48,917	4,110	874	48,917	4,110	874
Ark.	2,143	21,540	37	3,532	165,977	1,792	3,532	165,977	1,792
Calif.	2,054	48,009	376	20,984	21,370	588	20,984	21,370	588
Colo.	1,873	15,155	797	3,048	13,533	1,307	13,533	227,328	2,098
Del.	-	-	88	-	1,478	13,156	1,478	13,156	13
Fla.	-	-	-	122	1,094	78	122	1,094	78
Grand Total	20,091	147,022	2,172	23,658	302,565	3,086	302,565	429,825	5,429

(1) Reduction from previous figures, amount of reworking.

(2) In North Carolina, pine acreage in control because of damage. In Ga., N.C., Tenn., Va., and W. Va., pine acreage and control figures increased because former estimates too low as determined by acreage worked.

(3) Increase in Maryland control acreage due to increase in initially worked area.











TABLE #2A (Sheet #2)  
SUMMARY OF ALL RIBES ERADICATION BY PROGRAMS 1918-1941 (Inclusive)  
(Initial and Reeradication)

	ECW and SCS		RVA or NRA		Total Emergency Program (WPA - ECW - NRA)					
STATE	Acreage	Number Ribes	No. 6-hr:	Acreage	Number Ribes	No. 8-hr:	Acreage	Number Ribes	No. 6-hr:	No. 8-hr:
Worked	Destroyed	Man-Days	Worked	Destroyed	Man-Days	Worked	Destroyed	Man-Days	Worked	Destroyed
Wild	Cult.	Wild	Cult.	Wild	Cult.	Wild	Cult.	Wild	Cult.	Wild
Dela.	-	-	-	-	-	-	4,260	20	5,551	555
D. C.	-	-	-	-	-	-	-	-	-	-
Ga.	15,493	-	51	175,596	4,151	20,867	733	948,731	5,291,172	249,752
Ky.	-	-	-	31,523	2,385	1,830	887	52,140	3,095	1,350
Md.	20,455	585,803	4,812	127,452	1180,450	9,629	3,588	233,873	3,324,788	7,841
N. C.	166,109	60,529	7,001	205,103	38,342	127,055	3,351	5,350,391	1,742,125	107,177
S. C.	888	-	21	22,527	-	6,210	793	27,555	-	7,475
Tenn.	51,084	117,351	244	132,240	16,395	1,914	1,438	1,120,270	8,589,083	207,269
Va.	89,235	1976,624	28,305	124,400	710,045	21,227	5,471	784,783	7,601,218	13,029
W. Va.	88,250	222,854	1,291	47,545	541,351	4,703	2,410	355,455	5,056,258	31,000
TOTAL	407,000	6,070,174	10,411	1,000,910	2,140,144	101,000	10,000	17,001,000	127,710,000	1,000,000

TABLE #3A (Sheet #1)

SUMMARY OF ALL OTHER CONTROL WORK, 1918-1941 (Inclusive)

SUMMARY OF ALL OTHER CONTROL WORK, 1918-1941 (Inclusive)									
State	No. in- specimens	No. in- made	No. of Currents	No. of Days	No. of Days	No. of Days	No. of Days	No. of Days	No. of Days
State	No. in- specimens	No. in- made	No. of Currents	No. of Days	No. of Days	No. of Days	No. of Days	No. of Days	No. of Days
Dela.	-	-	-	2	700	1000	2000	-	21
D. C.	-	-	-	-	-	-	-	-	-
Ga.	19	1123	20	-	-	179	173	-	-
Ky.	-	-	-	1	300	-	300	-	-
Md.	26	2211	no data	7	4180	2082	7212	12514	144
N. C.	2	3	.25	22	5807	-	5807	1000	717
S. C.	-	-	-	-	-	-	-	-	-
Tenn.	-	-	-	3	1802	-	1202	-	74
Va.	24	12	.26	10	2020	-	2020	60	12
W. Va.	1	1	.50	2	762	-	762	2027	622
TOTAL	71	671	21 (2)	47	14479	6011	12149	14510	1777





TABLE #3A (Sheet #2)  
SUMMARY OF ALL OTHER CONTROL WORK, 1918-1941 (Inclusive)

PREERRADICATION SURVEY				TREATMENT OF INFECTED WHITE PINE				
STATE	No. Acres Mapped	No. 8-hr.	Number	Number	Number	Number	No. 8-hour	
	W. P. & Protection	Man	Trees	Trees	Trees	Cankers	Man	
	Zones	Days	Examined	Treated	Removed	Removed	Days	
Del.	4,267	449	-	-	-	-	-	
D. C.	1,875	(1)	-	-	-	-	-	
Georgia	940,354 (3)	11,925	-	-	-	-	-	
Kentucky	80,565	-	-	-	-	-	-	
Maryland	203,191 (2)	2,054	139,354	5,032	258	14,725	927	
N. C.	1,817,188	31,591	-	-	-	-	-	
S. C.	29,635	4	-	-	-	-	-	
Tenn.	1,041,503	28,145	-	-	-	-	-	
Va.	752,188	15,552	443,095	26,781	6,242	170,204 (4)	5,089 (5)	
W. Va.	823,553	18,750	-	-	-	-	-	
TOTAL	5,694,290 (6)	100,480	582,449	31,704	6,500	184,959 (4)	1,010 (5)	

(1) Worked by agent, charged to supervision.

(2) In Maryland 4553 acres burned out after re-sprouting.

(3) In Ga. acreage reduced, to tally with acreage reported, to 11,925 because of reductions in Ga. and Md.

(4) This includes 500 omitted in 1940 report.

(5) This includes 2 omitted in 1940 report.

(6) This is 176,098 more than shown in summary because of reductions in Ga. and Md.

TABLE #40 (Sheet #1)  
SUMMARY OF ALL SUPERVISORIAL, 1918-1941 (Inclusive)

STATE	(All Agencies Including State RPL)	(Including All Coop. Funds)	GRAND TOTAL
Delaware	4,716.43	949.20	5,665.63
District of Columbia	39.26	-	39.26
Georgia	125,141.23	19,656.08	144,797.31
Kentucky	7,010.11	230.00	7,240.11
Maryland	120,204.16	12,207.10	132,411.26
North Carolina	309,771.07	45,714.92	355,485.99
South Carolina	7,811.40	510.00	8,321.40
Tennessee	213,958.95	20,938.79	234,897.74
Virginia (Including Richmond)	419,309.21	11,268.34	430,577.55
West Virginia	297,027.64	15,134.07	312,161.71
TOTAL	1,605,703.46	136,785.27	1,742,488.73





TABLE #4A (Sheet #1A)  
SUMMARY OF ALL EXPENDITURES, 1918-1941 (Inclusive)

RECAPITULATION OF FEDERAL FUNDS									
STATE	Regular			Emergency			Total		
	B.P.F.I. & D.E.P.O.	Forest Service	Dept. of Interior	Fed. WPA CWA, ERA & NYA	State WPA	ECW SCS	RWA SCS	Emergency Program	Total
Delaware	293.20	-	-	1,422.23	-	-	-	-	4,482.33
D. C.	39.96	-	-	-	-	-	-	-	-
Georgia	1,091.83	-	-	116,424.21	-	281.86	7,343.53	124,049.40	124,049.40
Kentucky	1,570.33	-	-	-	-	-	6,239.78	6,239.78	6,239.78
Maryland	11,749.45	-	-	79,294.05	-	6,995.75	22,165.91	108,455.71	108,455.71
N. C.	4,550.88	-	-	192,102.91	77,052.25	3,637.95	27,307.10	302,110.18	302,110.18
S. C.	80.00	-	-	1,875.91	-	43.04	5,011.95	7,781.40	7,781.40
Tenn.	6,641.24	-	-	154,895.31	33,408.67	7,141.91	12,871.12	208,317.01	208,317.01
Va. (Incl. Richmond)	26,987.52	322.86	350.00	226,306.56	48,272.32	51,485.20	35,583.49	361,649.03	361,649.03
W. Va.	6,525.83	1,117.65	-	215,720.88	29,203.82	25,949.37	17,632.50	238,379.57	238,379.57
TOTAL	88,889.09	1,435.26	350.00	991,043.26	188,547.10	100,555.86	135,187.88	1,415,544.12	1,415,544.12

TABLE #4A (Sheet #2)  
SUMMARY OF ALL EXPENDITURES, 1918-1941 (Inclusive)

RECAPITULATION									
STATE	By Institution (Federal and State)					From			
	Supervision (Incl. State & Dist. Landers)	Radio Broadcasting	C.B.C. Broadcasting	Survey Bridging	Other Bridging	Radio Broadcasting	Survey Bridging	Other Bridging	All Other
Delaware	620.26	-	-	68.36	-	-	1,706.20	-	1,303.53
D. C.	39.96	-	-	-	-	-	-	-	-
Georgia	30,523.28	58,620.80(1)	85.00	243.20	-	-	33,843.85	19,492.31(1)	19,492.31
Kentucky	2,929.96	4,545.21	-	-	-	-	-	824.91	824.91
Maryland	55,317.92	81,719.45	-	500.32	-	-	7,550.05	6,987.90	6,987.90
N. C.	104,702.78	131,170.24	1.00	573.67	-	-	75,706.70	43,530.62	43,530.62
S. C.	866.24	7,450.16	-	-	-	-	20.00	285.02	285.02
Tenn.	56,335.79(2)	104,968.41(2)	-	25.14	-	-	71,208.13(2)	12,359.57	12,359.57
Va. (Incl. Richmond)	169,683.71	186,798.65	1.00	1,244.97	-	6,174.15	45,631.86	21,841.23	21,841.23
W. Va.	72,028.33	161,075.04	2.00	3,812.36	-	-	71,383.09	3,858.69	3,858.69
TOTAL	489,943.16(2)	716,238.72(3)	29.00	6,514.22	-	8,709.85	300,831.94(4)	103,164.12	103,164.12

- (1) \$355.16 erroneously charged in previous years to  
"All Other Expenses" charged now to Broadcasting.
- (2) Corrections made in Tenn. by subtracting from  
Supervision \$290.21 and adding to Broadcasting  
\$187.07 and to Survey \$95.54, the latter figures  
totaling \$480.81.
- (3) Cumulative figures increased by \$355.15 in Georgia  
and \$187.07 in Tennessee, a total of \$542.22.
- (4) Cumulative totals for survey increased by \$35.64  
in Tennessee.





SUMMARY 1941 COOPERATIVE RIBES ERADICATION ON STATE AND PRIVATE LANDS  
(Lea Act Funds) - 3103.14

INITIAL WORK		ERADICATION WORK		TOTALS		EXPENDITURES	
		No.8-hr:	Acre-:	No.8-hr:	Acre-:	No.8-hr:	Fed. Lea
STATE	Acreage	No. Ribes	Man	Days	Man	Days	Man
Ua.	4,297	62	46	4,297	42	46	600.00
Wa.	10	81	11	81	81	28	129.00
W. Wa.	6,712	10,747	77	2,232	3,748	132	251.08
TOTAL	11,019	10,890	134	3,569	8,282	204	980.08

TABLE #1 (Sheet 1)  
SUMMARY OF 1941 ERADICATION OF LEA COMMUNITIES 1913-1941 (including)

INITIAL WORK		ERADICATION WORK		TOTALS		EXPENDITURES	
		No.8-hr:	Acre-:	No.8-hr:	Acre-:	No.8-hr:	Fed. Lea
STATE	Acreage	No. Ribes	Man	Days	Man	Days	Man
Ua.	4,297	62	46	4,297	42	46	600.00
Wa.	10	81	11	81	81	28	129.00
W. Wa.	6,712	10,747	77	2,232	3,748	132	251.08
TOTAL	11,019	10,890	134	3,569	8,282	204	980.08

- (1) Supervision
- (2) Average figures raised through initial survey through 1941 completed estimates of 1940.
- (3) U. S. Army Engineers and Forestry Dept. worked with State & Federal in 1941.





TABLE #2 (Sheet #2)

## SUMMARY OF RIBES ERADICATION BY LAND OWNERSHIPS - 1918-1941 (Inclusive)

LAND OWNERSHIP	PER ERADICATION WORK				TOTALS (Initial and Rework)			
	Acreage Worked	No. Ribes	No. 8-hour Man Days	Acreage Worked	No. Ribes	No. 8-hour Man Days	Destroyed	Man Days
National Forests	255,584	4,739,580	23,595	1,422,983	10,505,125	32,332		
State and private	34,860	341,733	2,333	174,517	2,379,715	25,016		
Indian Reservations	-	-	-	100	-	-		(1)
<b>TOTAL</b>	<b>290,444</b>	<b>5,081,313</b>	<b>25,928</b>	<b>1,597,480</b>	<b>12,884,840</b>	<b>108,352</b>		
State and private	3,762,746	4,029,620	36,314	5,802,105	15,134,266	174,654		
<b>TOTAL</b>	<b>2,046,785</b>	<b>5,249,045</b>	<b>39,744</b>	<b>7,399,523</b>	<b>31,019,108</b>	<b>233,352</b>		

## (1) Reservation

NOTE: (Sheet #3)

## SUMMARY OF RIBES ERADICATION ON NATIONAL FORES 1918-1941 (Inclusive)

NATIONAL FORES	PER ERADICATION WORK				TOTALS (Initial and Rework)			
	Acreage Worked	No. Ribes	No. 8-hour Man Days	Acreage Worked	No. Ribes	No. 8-hour Man Days	Destroyed	Man Days
Great Smoky Mts. (Tenn.)	41,750	1,041,000	10,100	1,422,983	10,505,125	32,332		
Great Smoky Mts. (Both States)	34,860	341,733	2,333	174,517	2,379,715	25,016		
Shenandoah (Va.)	15,580	25,000	75	174,517	2,379,715	25,016		
Blue Ridge Parkway (N.C.)	170	-	-	100	-	-		(1)
<b>TOTAL</b>	<b>92,360</b>	<b>1,066,733</b>	<b>10,175</b>	<b>1,597,480</b>	<b>12,884,840</b>	<b>108,352</b>		

(1) 170 acres added to initial work since number of man-days required between 1st and 2nd workings.  
 (2) Acreage reported increased because of surveys in 1941.

NOTE: (Sheet #4)

## SUMMARY OF RIBES ERADICATION ON NATIONAL FORES 1918-1941 (Inclusive)

NATIONAL FORES	PER ERADICATION WORK				TOTALS (Initial and Rework)			
	Acreage Worked	No. Ribes	No. 8-hour Man Days	Acreage Worked	No. Ribes	No. 8-hour Man Days	Destroyed	Man Days
Great Smoky Mts. (N.C.)	15,592	4,819	214	29,592	83,000	1,893		
Great Smoky Mts. (Tenn.)	-	-	-	101,964	127	721		
Great Smoky Mts. (Both States)	13,992	4,819	214	131,557	53,137	2,404		
Shenandoah (Va.)	15,580	25,000	75	42,320	2,336,575	22,511		
Blue Ridge Parkway (N.C.)	170	-	-	340	3	1		
<b>TOTAL</b>	<b>29,855</b>	<b>641,736</b>	<b>9,839</b>	<b>174,517</b>	<b>2,379,715</b>	<b>25,016</b>		

## (2) Supervision





TABLE #5A (Sheet #5)

## SUMMARY OF RIBES ERADICATION ON INDIAN RESERVATIONS 1918-1941 (Inclusive)

INDIAN RESERVATIONS		CONTROL AREAS		INITIAL ERADICATION WORK	
Total	Acres	Total	Acres	No. killed	No. destroyed
of W. P. and prot. zones	worked initially	worked	destroyed	Mon. days	
5	100				
Qualla (N. C.)					
(Called Cherokee in 1940)					

(1) Supervision

TABLE #5A (Sheet #5)

## SUMMARY OF RIBES ERADICATION ON INDIAN RESERVATIONS 1918-1941 (Inclusive)

INDIAN RESERVATIONS		ERADICATION WORK		TOTALS (Initial & Summary)	
Total	Acres	Total	Acres	No. killed	No. destroyed
of W. P. and prot. zones	worked initially	worked	destroyed	Mon. days	
5	100				
Qualla (N. C.)					
(Called Cherokee in 1940)					

TABLE #5A (Sheet #5)

## SUMMARY OF RIBES ERADICATION ON INDIAN RESERVATIONS 1918-1941 (Inclusive)

STATES AND TERRITORIES		ERADICATION WORK		TOTALS (Initial & Summary)	
Total	Acres	Total	Acres	No. killed	No. destroyed
of W. P. and prot. zones	worked initially	worked	destroyed	Mon. days	
194	4,287	1,697			
Indians					
N. C.	45	1,076			
Georgia	270,333	489,000			
Louisiana	47,983	50,000			
Maryland	70,847	175,968			
North Carolina	624,891	1,384,715			
South Carolina	15,067	26,085			
Tennessee	457,234	753,000			
Virginia	185,853	525,000			
West Virginia	246,877	671,043			
TOTAL	1,345,487	4,077,538			

(1) Cherokee to supervision.

(2) Increase over 1940 because of work done including

(3) Resettlement lands included in Maryland.

(4) Decrease in estimate of 1940.

(5) State is private owner; reduced 100 acres because of change in ownership to State 31-100 acres.

(6) Increased by 1 acre of new land and 67 acres of normal land called W. P. zone in 1940.





TABLE 33A (Sheet 49)

SUMMARY OF OTHER SUBSTITUTION OF PINE AND DOUGLASS LUMBER 1915-1941 (Continued)

State and District	Lumber	Average	Total	Subst. by	Subst. by	Subst. by	Subst. by	TOTALS (Initial & Revised)	
								No. Bldgs.	No. Bldgs.
Totals								5,990	508
Substitution of Douglas									(1)
Georgia	11,000	200,000	7					1,837	500
Alabama	750							3,700,000	52,080
Virginia	60,000	160,000	7					1,778,000	24,050
North Carolina	1,000,000	400,000	350					7,000,000	1,560
South Carolina	800							4,100,000	83,000
Tennessee	15,000	200,000	7					7,000,000	32,000
Florida	20,000	200,000	7					4,500,000	40,000
West Virginia	20,000	200,000	7					4,500,000	40,000
TOTAL	2,700,000	4,800,000	3,000,000	10,100,000	10,100,000	10,100,000	10,100,000	174,050	

(1) Substitution of Douglas

TABLE 33B (Sheet 50)

SUMMARY OF OTHER SUBSTITUTION OF PINE AND DOUGLASS LUMBER 1915-1941 (Continued)

State and District	Lumber	Average	Total	Subst. by	Subst. by	Subst. by	Subst. by	TOTALS (Initial & Revised)	
								No. Bldgs.	No. Bldgs.
Totals								5,990	508
Substitution of Douglas									(1)
Georgia	11,000	200,000	7					1,837	500
Alabama	750							3,700,000	52,080
Virginia	60,000	160,000	7					1,778,000	24,050
North Carolina	1,000,000	400,000	350					7,000,000	1,560
South Carolina	800							4,100,000	83,000
Tennessee	15,000	200,000	7					7,000,000	32,000
Florida	20,000	200,000	7					4,500,000	40,000
West Virginia	20,000	200,000	7					4,500,000	40,000
TOTAL	2,700,000	4,800,000	3,000,000	10,100,000	10,100,000	10,100,000	10,100,000	174,050	

(1) Substitution of Douglas

(2) Substitution of Douglas

(3) Substitution of Douglas





TABLE #5A (Sheet 10)

## SUMMARY OF RIBES ERADICATION ON NATIONAL FORESTS 1918-1941 (Inclusive)

		REERADICATION WORK				TOTALS (Initial & Remarks)	
NATIONAL FORESTS		Acreage :	No. Ribes :	No. 8-hour :	Acreage :	No. Ribes :	No. 8-hour :
		Worked :	Destroyed :	Man Days :	Worked :	Destroyed :	Man Days :
Co.	- Chatterbox	1,250	25,734	651	461,131	4,260,467	18,512
Co.	- Cumberland	50 (1)	1	-	30,615	2,096	337
W. D.	- Mantahala	-	-	-	55,103	393	494
W. C.	- Plough	149,916	340,868	3,182	281,113	561,239	11,392
W. C.	- Tumbler	385	-	10	4,125	38	63
W. C.	- Cherokee	38,110	4,750	227	243,250	1,715,002	11,154
W. C.	- George Washington	40,240	494,536	3,253	165,320	1,838,336	19,939
W. C.	- Jefferson	3,962	757,772	5,387	59,460	1,344,679	12,456
W. C.	- George Washington	15,786	79,036	834	62,201	664,047	5,251
W. C.	- Mantahala	5,001	52,373	252	79,525	370,928	3,785
TOTAL		245,784	1,760,380	13,695	1,428,868	10,606,125	83,382

(1) 50 acres used last year (1941) was incorrect, representing only white pine. 237 is same figure as in 1939 report. Error will be corrected in 1942 report. It was not discovered until 1941 as it had been used in 1939.

## TABLE #5B (Sheet 11)

## STATE OF MICHIGAN RIBES ERADICATION 1918-1941 (Inclusive)

		Control	8-hour	Control Areas	No. Ribes Destroyed	Control Area: 8-hour	Control Area: 8-hour
		Area	Area	Area	Area	Area	Area
Co.	- Chatterbox	4,387	4,387	-	3,702	-	4,267
Co.	- Cumberland	1,870	1,870	-	-	-	1,870
Co.	- Georgia	960,000 (1)	450,309	12,864	5,589,966	9,646	930,000
Co.	- Kentucky	80,528	80,528	780	3,935	-	80,528
Co.	- Maryland	175,253 (2)	175,253	57,050	5,702,423	-	125,000
Co.	- North Carolina	1,586,066 (1)	1,586,066	1,700,985	2,422,883	-	1,561,807
Co.	- South Carolina	29,545	29,545	1,045	1,487	-	29,545
Co.	- Tennessee	1,100,000 (1)	1,064,041	66,189	5,845,327	35,919	885,000
Co.	- Virginia	724,000 (2)	598,804	100,512	7,628,626	25,195	395,000
Co.	- West Virginia	800,000 (1)	782,320	108,027	5,864,559	51,620	533,745
TOTAL		5,453,181	5,350,800	2,048,785	31,019,105	102,381	4,496,891

(1) In Co., Md., D.C., Tenn., and West Va. control area figures were raised, since 1940 estimates were extended in initial working in 1941.

(2) In Va. the estimated control area figure was rounded off to the nearest thousand.





FEDERAL  
COUNCIL ON RESEARCH

State and Name	Title	Originally Appointed	Source of Salary	Termination
<u>GEORGIA</u>				
William V. Zimmer	State Leader	5-2-34	Fed. WPA	
<u>MARYLAND</u>				
Henry E. Yost	State Leader	2-13-33	Reg. & Fed. WPA Admin.	
<u>NORTH CAROLINA</u>				
Hillary B. Inague	State Leader	1-1-34	Reg., State, State & Fed. WPA	
Mark M. Ferguson	Agent	2-12-35	Fed. WPA	
Oscar V. Coulter	Agent	4-15-35	Fed. & State WPA	12-31-41
Hobart A. Whitman	Agent	7-27-34	Fed. & State WPA	
<u>TENNESSEE</u>				
Radford D. Tanksley	State Leader	3-24-35	State, Reg. & Fed. WPA	
John W. Lane	Agent	8-25-35	Fed. WPA	
Ralph L. Miller	Agent	4-7-37	State WPA	8-30-41
Walter A. Stegall	Agent	5-7-34	Fed. & State WPA	
<u>VIRGINIA (Richmond)</u>				
Roy G. Pierce	Pathologist	7-1-15	Regular	
J. Curtis Ball	Asst. Forester	10-9-33	Regular	
Harry K. Cooper	Jr. Admin. Asst.	10-21-33	Regular	
Minnie C. Hudgins	Asst. Clerk, Stan.	12-21-35	Regular	
Ellen G. Fischer	Jr. Clerk Stan.	6-13-33	Fed. WPA Admin.	
Jewell E. Hudson	Jr. Clerk Stan.	8-17-33	Fed. WPA Admin.	
<u>(Charlottesville)</u>				
John G. Luce, Jr.	State Leader	5-21-34	State & Fed. WPA	
George C. Cramer	Agent	2-6-35	Fed. WPA & State	
William M. Early	Agent	5-21-34	State & Fed. WPA	9-17-41
Martin Q. Miller	Agent	7-1-37	State WPA & Park Serv.	9-23-41
<u>WEST VIRGINIA</u>				
Joseph M. Ashcroft	State Leader	5-12-34	State, Fed. WPA & Fed. WPA Admin.	
George C. Hamilton	Agent	6-12-34	Fed. & State WPA & Reg. Coop.	
Kermit McKeever	Agent	9-5-35	Fed. & State WPA and Reg. Cooperative	10-17-41
Ralph W. Welch	Agent	5-12-34	Fed. WPA & Reg. Coop.	
B. Eugene Lawton	Agent	11-28-41	Fed. WPA	11-30-41
Delbert L. Gillispie	Agent	11-3-41	Fed. WPA	
Raphael H. Daugherty	Agent	12-28-41	Fed. WPA	



County

Elmer County

George L. Gandy  
Fred H. Gandy

Rehan County

Wladimir L. Gandy

County

Geomet County

James L. Gandy  
John L. Gandy  
Thomas L. Gandy

County

Acie County

William L. Gandy (aka W. L.)

Wm L. Gandy

Wm L. Gandy  
Wm L. Gandy

Stevens County

Wm L. Gandy  
Wm L. Gandy

Wendell and Henry County

Wm L. Gandy

County

Woke County

Wm L. Gandy

Washington and Buller County

Wm L. Gandy

County

Wagstaff County

Wm L. Gandy  
John L. Gandy

Highland County:

Doyle Simpson

Page County:

Bernard A. Nelson (Foreman Grade 1)

Rockingham County:

Bernie H. Toulson (Foreman Grade 1)  
Gennie L. Morris  
Augustus B. Toulson  
Eddy H. Michael  
Melvin H. Lough

West Virginia

Fairfax County:

Clarence Polk

Morror County:

Alvin Dwyer  
Robert L. Wood

Pendleton County:

Marlin I. Tolson  
Richard H. Mitchell

Pocahontas County:

Garry P. Hargis  
Forrest G. Griffin

Snyder County:

Clenden H. Hargis



# Summary of Accidents Involving Motor Vehicles in Pennsylvania 1941

State	Name of Injured	Date of Injury	Character of Injury	Compensation Time Lost	Reported to Compensation Commission
N. C.	Sam P. Hughes	5/1	Left hand lacerated, infected	5 days	Yes
Penn.	Howe Simerly	4/10	Severe injury to buttocks	9 days	Yes
Va.	Obie T. Slemmons	5/21	Laceration of right leg	None	No
"	Russell W. Zark	5/2	Thorn in hand	None	No
"	Joseph C. Marick	5/14	Eyeball cut	Half day	Yes
"	John H. Wise	5/20	Blow to head scratches	None	No
"	Ralph W. Gave	5/23	Poison ivy	None	Yes
W. Va.	Ernest T. Meador	5/16	Back injured by large rock rolling over him	6 days	Yes
"	Henry Smith	5/18	Eyeball scratches	None	Yes

## SUMMARY OF TRUCK ACCIDENTS

During 1941

No accidents to trucks or passenger cars were reported during the calendar year 1941. This is in contrast to three truck accidents in 1940 and seven accidents in 1939.

CONFIDENTIAL

CONFIDENTIAL

LOCAL CONTROL	Various and varied committees
OTHER ACTIVITIES	Various and varied committees
OFFICES	Various and varied committees

CONFIDENTIAL

LOCAL CONTROL	Various and varied committees
OTHER ACTIVITIES	Various and varied committees
OFFICES	Various and varied committees

CONFIDENTIAL

LOCAL CONTROL	Various and varied committees
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CONFIDENTIAL

OFFICES	Various and varied committees
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CONFIDENTIAL

CONFIDENTIAL

LOCAL CONTROL	Various and varied committees
OTHER ACTIVITIES	Various and varied committees
OFFICES	Various and varied committees

CONFIDENTIAL

LOCAL CONTROL	Various and varied committees
OTHER ACTIVITIES	Various and varied committees
OFFICES	Various and varied committees

CONFIDENTIAL

(Included in the above cooperation)

LOCAL CONTROL	Various and varied committees
OTHER ACTIVITIES	Various and varied committees
OFFICES	Various and varied committees



KENTUCKY  
(1945-1946)

WPA

LOCAL CONTROL	Barren County
OTHER ACTIVITIES	Barren County
OFFICES	Barren, Boyle and Wayne counties

TENNESSEE

Federal WPA

LOCAL CONTROL	Franklin and Washington counties
OTHER ACTIVITIES	Franklin and Washington counties
OFFICES	Franklin, Hard and Sullivan counties

State WPA

LOCAL CONTROL	Franklin, Hard, Hard, Hard counties
OTHER ACTIVITIES	Franklin, Hard, Hard and Hard counties
OFFICES	Franklin, Hard, Hard and Hard counties

Recreation

(Under State and Local Cooperation)

OFFICE	Franklin County
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VIRGINIA

Federal WPA

LOCAL CONTROL	Augusta, Bath, Frederick, Greene, Highland, Madison, Page, Rappahannock, Rockbridge and Rockingham
OTHER ACTIVITIES	Augusta, Bath, Fairfax, Greene, Hanover, Highland, Madison, Page, Rappahannock, Rockbridge and Rockingham
OFFICES	Augusta, Rockbridge, Washington counties

State WPA

LOCAL CONTROL	Bath, Page and Rappahannock counties
OTHER ACTIVITIES	Rappahannock and Rockingham counties
OFFICES	Augusta, Bath, Page and Rockingham counties

VERG TITIA  
(Continued)

### OTHER ACTIVITIES

Madison, Expo and Repopulation: Boundaries

OFFICE

Page County

2005-2006

LOCAL CONTROL

OFFICE

## Henrico County

## WEST VIRGINIA

Volume 1 WY

## LOCAL CONTROL

OTHER ACTIVITIES

## OFFICES

## State WPA

## LOCAL CONTROL

Hampshire, Hardy, Pendleton and Summers counties

## OTHER ACTIVITIES

## OFFICES

Grant, Hardy and Mercer counties

## Regular

(Includes State and Local Cooperation)

## LOCAL CONTROL

OFFICES

Focahontas, Mercer and Pendleton counties

## 200

## LOCAL CONTROL

## Summers County

### OTHER ACTIVITIES

Berkeley and Morgan counties

OFFICE

Berkeley County





## FEDERAL

During the calendar year 1941, Federal funds were expended for blight root control amounting to \$197,011.47. Expenditures from Federal WPA project including administration funds amounted to \$112,534.25 in contrast to \$95,571 expended in 1940 and \$151,509 expended in 1939. Expenditures from State WPA and Federally-sponsored State WPA dropped from \$93,586 in 1940 to \$62,968.77 in 1941. Combining all WPA funds and WPA the total expenditure in 1941 amounted to \$175,503.25 in contrast to \$189,157 spent in 1940 and \$183,080 spent in 1939.

Expenditures from CCC in 1941 amounted to \$5,030.25 in contrast to \$11,550 spent in 1940 and \$12,066 spent in 1939. Regular fund expenditures were segregated by Bureau the amounts being as follows:

Bureau of Entomology and Plant Quarantine	
Lea Act Fund (Appropriation 3104)	\$851.66
Appropriation 3101	16,835.91
Forest Service (At Parsons Mass. & Va.)	130.20
Dept. of Interior, Park Service (At Shenandoah Nat'l Park, Va.)	357.00
Total Regular Funds	\$17,577.57

This expenditure of \$17,577.57 is an increase over the \$16,670 spent in 1940 and \$9,359 spent in 1939.

## STATE AND PRIVATE COOPERATION

During the calendar year 1941, \$18,236.72 was expended from state and private cooperative funds in contrast to \$11,855 spent in 1940 and \$22,341 spent in 1939.

Cash expenditures increased from \$8,177.67 in 1940 to \$10,114.12 as follows:

Georgia	2637.31
North Carolina	1529.89
Tennessee	1084.77
Virginia	871.57
West Virginia	2295.48
Total	\$10,114.12

This \$10,114.12 represents an increase of 25.68% over the cash expenditures of 1940.



## COMPARISON OF EXPENDITURES

For the

## SOUTHERN APPALACHIAN STATES

During

Calendar Years

1937 to 1941 Inclusive

As given in the

Annual Reports for the Region

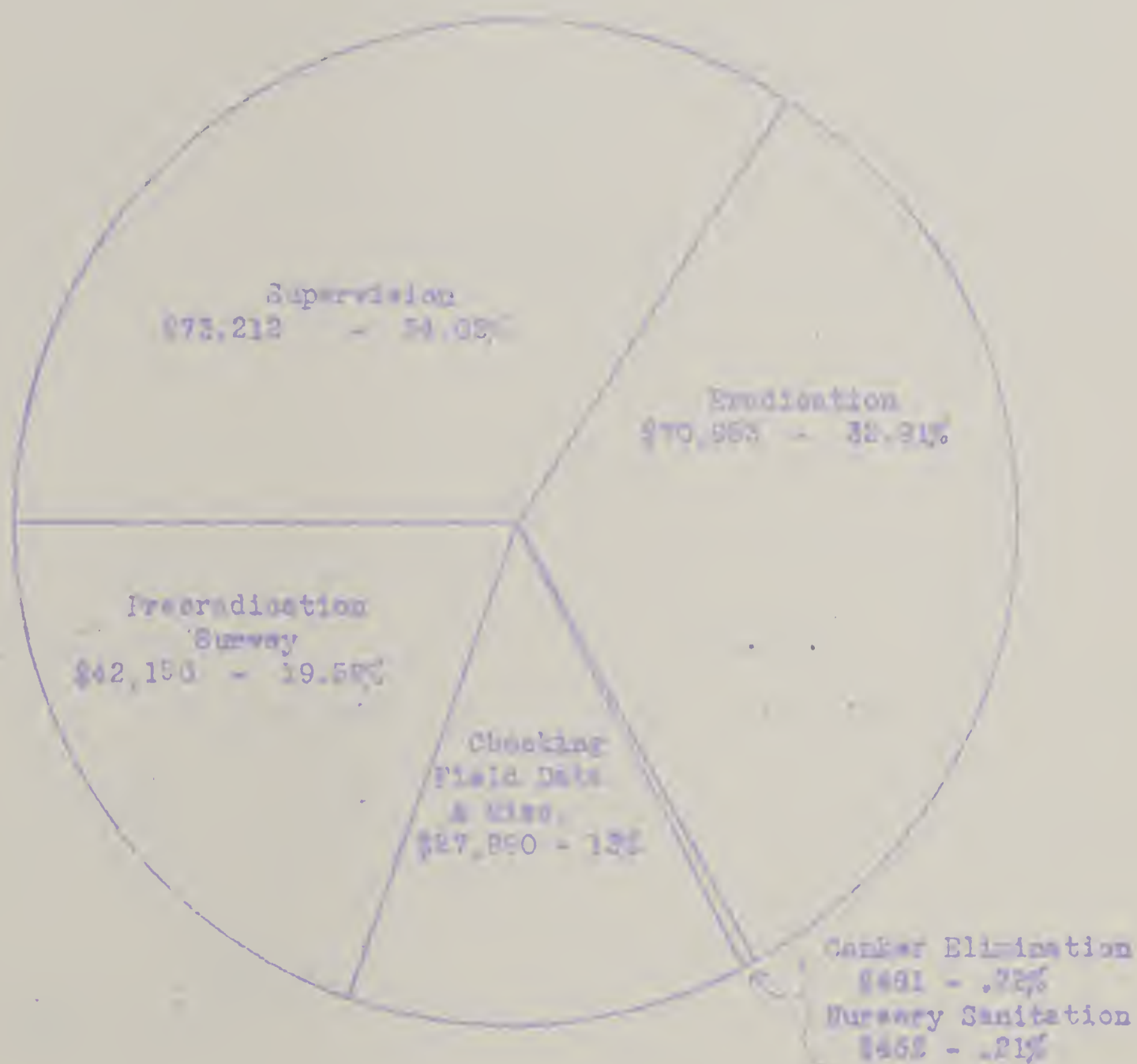
Agency	1937	1938	1939	1940	1941
Federal	\$263,192.96	\$197,248.63	\$205,697.87	\$217,387.38	\$197,011.00
State and Coop. Agencies	28,120.90	32,273.52	22,341.19	14,855.42	18,236.00
Combined Federal and State	264,313.86	229,522.21	228,039.06	232,242.80	215,248.00

Totals 1928 - 1941	
Federal	\$1,505,788.46
State and Coop. Agencies	136,768.27
Combined all Agencies	1,642,556.73

SECTOR BUDGET FOR THE FISCAL YEAR 1961

(Total Expenditures \$11,446)

Calendar Year 1961

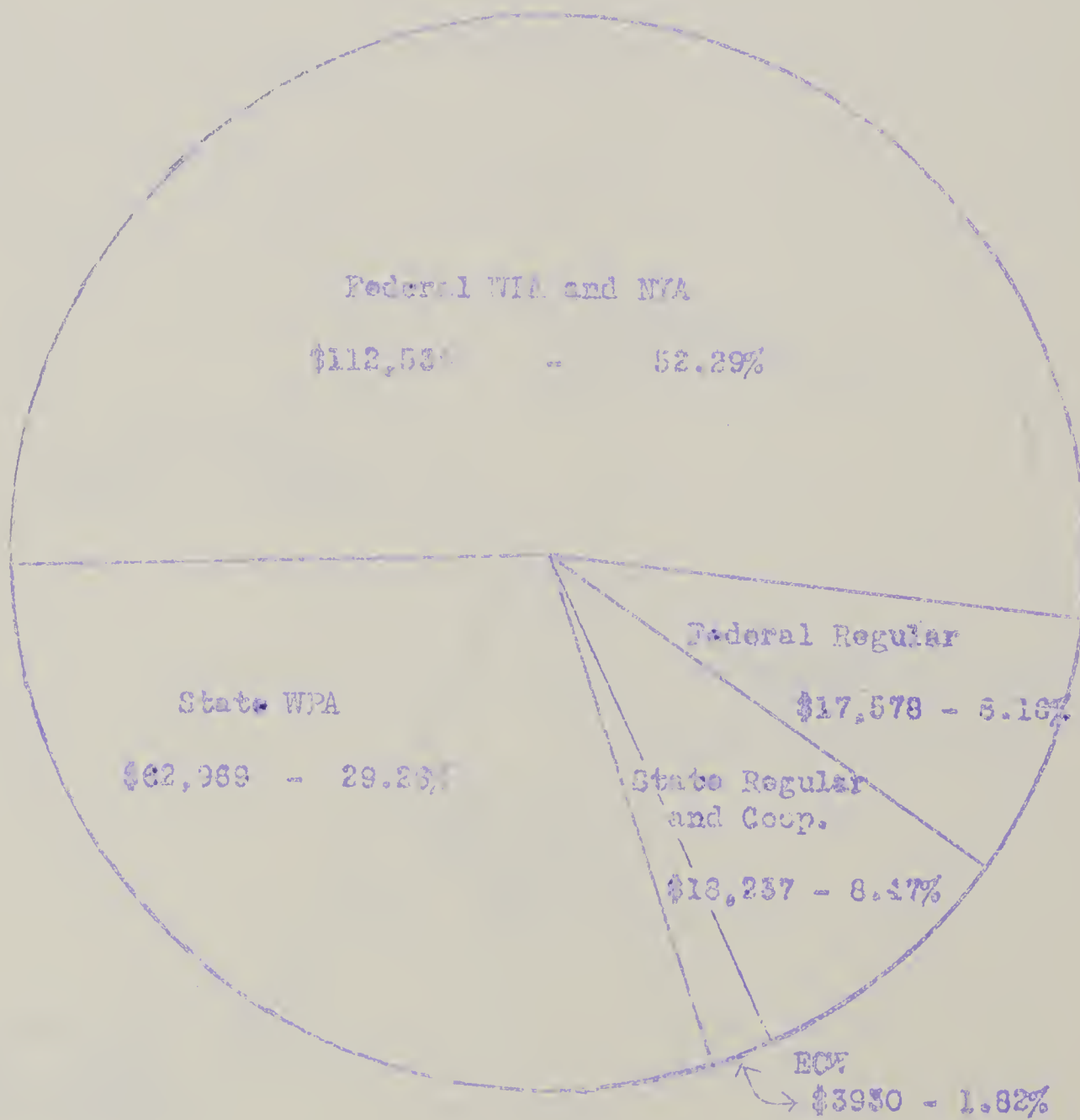




GRAYS COUNTY TOTAL EXPENDITURES, BY CATEGORY

(Total Expenditures \$215,243)

Calendar Year 1941



DATE OF APPROVAL OF WORK ORDER FOR PROJECTS AND  
SPECIALLY-APPROVED STATE FOR APPROVED STATE WORK  
IN OPERATION DURING CALENDAR YEAR 1941.

Order No.	State	Approp. No.	Period	Total Appropriation
1	N.C.	165-2-32-127	12/7/40	325,056.00
2	Tenn.	65-1-11-106	1/4/40	36,591.00
3	Tenn.	165-2-11-111	7/1/41	27,611.00
4	Va.	65-1-31-95	12/7/37	52,017.00
5	Va.	165-2-31-285 <sup>(1)</sup>	1/2/41	25,022.00
6	W.Va.	65-1-11-116	1/8/40	32,392.00
Total				517,725.00

Order No.	Expended in Cal. Yr. 1940	Expended in Cal. Yr. 1941	Unexpended Balance 1/1/42	
1	31,087.73	26,469.05	38,199.21	
2	14,176.05	8,215.68	4,172.27	Proj. termi- nated 6/30/41
3	0	10,996.91	16,627.06	
4	28,591.81	3,357.75	97.11	Proj. termi- nated 3/8/41
5	0	3,912.62 <sup>(1)</sup>	21,109.58	
6	18,711.00	12,481.00	1,200.00	Proj. termi- nated 11/11
Totals	82,566.62	46,152.95	85,705.53	

(1) Expended in Richmond Office 268.03



Fiscal Year 1941

State	Total Expenditures Fiscal Year 1941	Expenditures	
		7/1 to 12/31 1940	1/1 to 6/30 1941
Delaware	\$62.63	\$62.63	0
Georgia	561.12	522.12	39.00
Maryland	2,402.84	1,450.48	912.36
North Carolina	863.30	667.67	195.63
Tennessee	1,445.34	1,115.75	329.59
Virginia	746.80	746.80	0
Richmond, Va.	12,610.54	6,247.12	6,363.42
West Virginia	792.95	638.41	154.54
GRAND TOTAL	\$19,485.52	\$11,490.98	\$7,994.54
Sub-Total - Va.	\$13,357.34	\$6,993.92	\$6,363.42

Calendar Year 1941

State	Expenditures		Expenditures		Cal dar Yr.
	Jan. 1 to June 30, 1941		July 1 to Dec. 31, 1941		
	Salaries	Non-labor	Salaries	Non-labor	
Georgia	0	\$39.00	0	\$18.00	\$57.00
Maryland	900.00	12.36	\$1,230.54	187.39	2,330.93
North Carolina	183.50 (1)	12.13	112.50	10.00	318.13
Tennessee	281.25	48.34	675.00	128.65	1,133.24
Virginia	0	0	0	0	0
Richmond Office	5,349.83	1,013.59	5,479.84	879.45	12,722.71
West Virginia	0	154.54	56.25	74.75	285.53
TOTAL	\$6,714.58	\$1,279.96	\$7,554.13	\$298.24	\$16,846.91

(1) Actually only \$138.75 was expended in these six months being \$44.75 less than now reported. \$183.50 reported to make cumulative amount expended for fiscal year correct.

State	1933 & 1934	1935	1936	1937	1938
Georgia	\$281.66				
Maryland	252.00	563.00	118.00		\$725.00
North Carolina	2 614.60			2,943.17	88.50
South Carolina	43.04				
Tennessee	1,768.92	73.25	18.70		
Virginia	24,388.96	18,648.52	5,010.42	130.21	968.30
W. Virginia	3,972.01	1,360.52	3,512.73	2,008.00	1,059.00
Totals	\$32,461.30	\$18,915.29	\$8,549.85	\$6,071.51	\$5,812.70

State	1930	1940	1941	All Years
Georgia				281.66
Maryland	671.25	4,672.50	2,654.00	6,995.75
North Carolina	2,333.46	653.11		3,037.95
South Carolina				43.04
Tennessee	3,357.25	1,923.79		7,141.91
Virginia	1,301.26	2,005.50	33.00	52,486.20
W. Virginia	4,399.66	5,304.18	1,213.25	25,949.37
	12,066.39	11,859.11	3,900.25	100,535.88

For data on eradication by CCC, ECW and SCS, see Annual Statistical Tables 2, Sheet 2 for 1941, and Table 2A, Sheet 2 for cumulative data for all years through 1941. CCC funds have been largely expended for fiber eradication, including supervision, labor, transportation, tools and other supplies. Some preeradication surveys and nursery sanitation have also been paid for from CCC funds.

In Georgia, North Carolina, South Carolina, Tennessee, Virginia and West Virginia CCC work has been largely on national forests or national park lands; in Maryland on state land including federal lands leased to the state. In addition work on private land has been conducted in Georgia, Maryland, Virginia and West Virginia by CCC men.





EXPENDITURES OF THE DISTRICT OFFICE  
AT RICHMOND, VIRGINIA IN  
CALENDAR YEAR 1941

Details on Expenditures of the District Office from July 1, 1935 to December 31, 1940 are to be found in the annual report for the Region for 1940 on Page C-10.

The following abbreviated table brings the expenditures up to date, through December 31, 1941.

Fiscal Years	Regular Approp.	Admin. Funds	Va. WPA Approp.	WPA	Totals
1935 - 12/31/40	\$35,951.46	17,946.67	\$19,106.51	\$321.49	\$73,326.13
Jan. 1 - June 30, 1941	6,363.42	2,253.77	1,166.07 <sup>(1)</sup>	210.20	18,371.85
July 1 - Dec. 31, 1941	6,359.29	2,017.10			
Totals	\$48,674.17	\$22,219.54	\$20,272.58	\$531.69	\$91,697.98
Cal. Yr. 1941	\$12,772.71	\$4,272.87	\$1,166.07	\$210.20	\$18,371.85

(1) Of this \$1,097.14 was from Federal WPA and  
       68.93       "       "       State WPA, making total  
       of       \$1,166.07



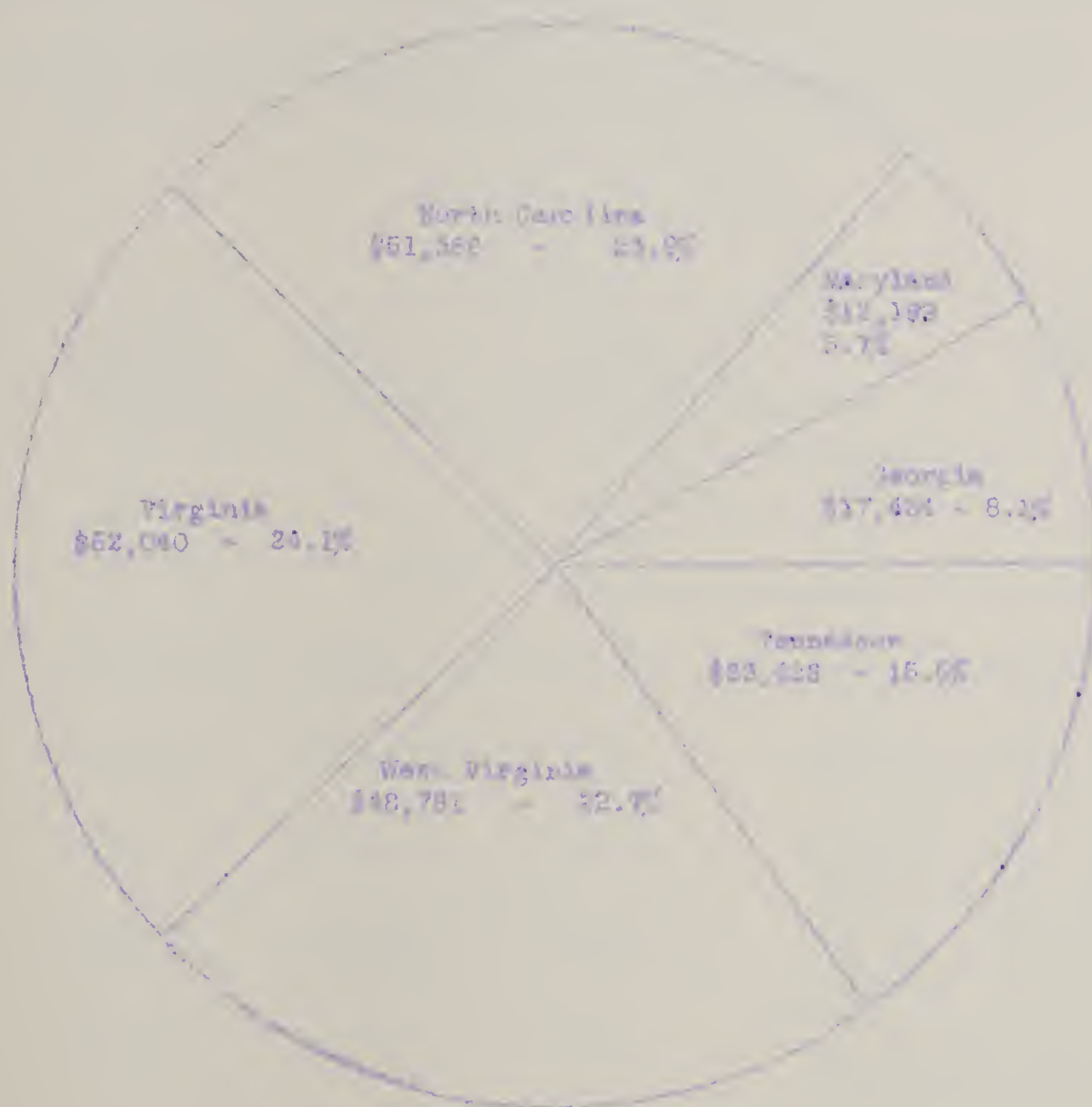
The first part of the paper is devoted to the study of the properties of the function  $f(x)$  defined by the equation  $f(x) = \sum_{n=0}^{\infty} a_n x^n$ . It is shown that  $f(x)$  is a continuous function of  $x$  and that it satisfies the functional equation  $f(x) = x f(x^2) + 1$ . The second part of the paper is devoted to the study of the properties of the function  $g(x)$  defined by the equation  $g(x) = \sum_{n=0}^{\infty} b_n x^n$ . It is shown that  $g(x)$  is a continuous function of  $x$  and that it satisfies the functional equation  $g(x) = x g(x^2) + 1$ .

Table 1				1951
Year	1950	1951	1952	1953
1950	100	100	100	100
1951	100	100	100	100
1952	100	100	100	100
1953	100	100	100	100
1954	100	100	100	100
1955	100	100	100	100
1956	100	100	100	100
1957	100	100	100	100
1958	100	100	100	100
1959	100	100	100	100
1960	100	100	100	100
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1971	100	100	100	100
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2089	100	100	100	100
2090	100	100	100	100
2091	100	100	100	100
2092	100	100	100	100
2093	100	100	100	100
2094	100	100	100	100
2095	100	100	100	100
2096	100	100	100	100
2097	100	100	100	100
2098	100	100	100	100
2099	100	100	100	100
2100	100	100	100	100

WAFB BROADCASTING SYSTEM - COLUMBIA, MISSOURI, ST. LOUIS

(Total Expenditures \$346,241)

Calendar Year 1941







# FIELD STUDIES

## Ribes Regeneration

During 1941 an effort was made to establish a series of ribes regeneration plots on a somewhat uniform basis so that the results could more readily be compared with each other. The plots were established using the milacre as the unit and with the plot in the form of a double row of milacres up to five chains long or a square or rectangular plot containing up to 100 or more milacres.

The purpose of the plots is to secure data regarding the rate of ribes regeneration following eradication to be used as a guide in estimating the time to post check and rework the control areas. More emphasis is being placed on regeneration from seed than from sprouts or missed bushes. Considerable data are already available regarding the relative amount of live stem production of sprouts and seedlings. The use of chemicals and subsequent workings should, to a large degree, eliminate sprouts as a future source of live stem.

For details concerning the work of laying out such study plots and their objective consult the Memo on Ribes Regeneration Study Plot which has been mimeographed.

A table has been prepared showing the location by counties of all ribes regeneration study plots, the ribes species, date of establishment, and size.

### RIBES REGENERATION PLOTS

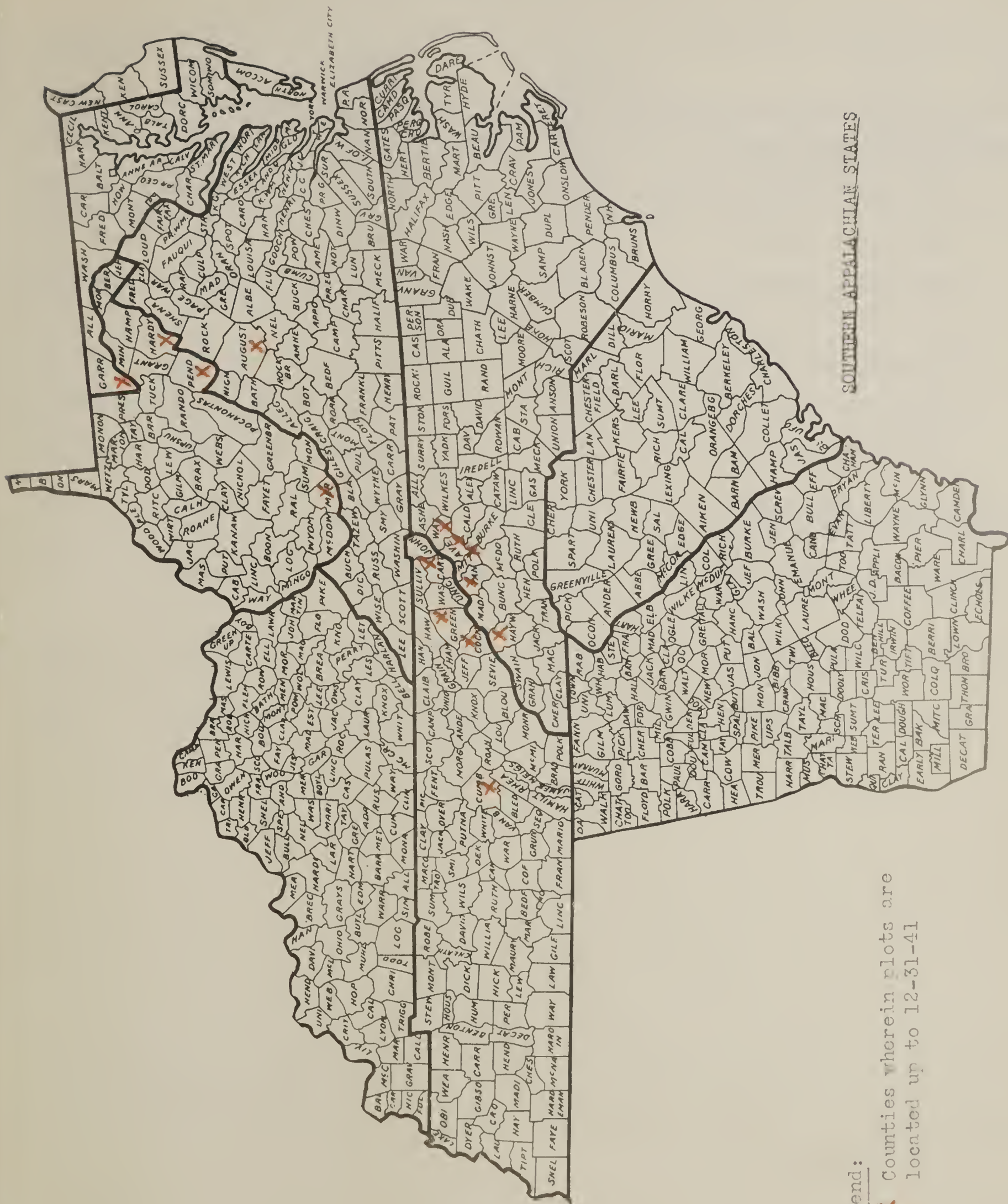
as of 12-31-41

State	County & Plot No.	Ribes Species	Date Established	Remarks
Ga.	....	....	....	No plots established prior to 12-31-41.
Md.	Garrett 1	Rotundifolium	11/39	Plot on recurrence of seedlings - 1 sq. chain.
Md.	Garrett 2	Rotund. & gland- ulosum	5/38	Plot on growth of seedlings 18 one-acre plots.
Md.	Garrett 3	Rotundifolium	5/38	Growth of seedlings, 13 one-half-acre plots.
N. C.	Avery 1	Cynosbati	6/41	Strip plot 100 milacres, regeneration all types.
N. C.	Avery 2	Cynosbati	7/41	Strip plot 100 milacres, regeneration all types.
N. C.	Avery 3	Cynosbati	9/41	Rectangular plot 250 milacres, right of way and adjacent woods. Plot covers power line.



State	County	Locality	Date	Description
N. C.	Ashe	1	5/41	Rectangular plot 30 milacres. Plot covers roadcut & steep.
N. C.	Wayne	1	5/41	Strip plot 40 milacres. Northern exposure.
N. C.	Mitchell	1	5/41	Rectangular 80 milacres. Southern exposure.
N. C.	Mitchell	2	5/41	Rectangular 80 milacres. Northern exposure.
N. C.	Mitchell	3	5/41	Rectangular 80 milacres.
N. C.	Watauga	1	5/41	Strip plot 40 milacres. Covers plateau & open woods.
N. C.	Watauga	2	5/41	Rectangular 50 milacres. Burned area 1941.
N. C.	Watauga	3	5/41	Rectangular 50 milacres. Similar to 2 but not burned.
Tenn.	Cook	1	5/41	Strip plot 40 milacres. Typical hardwood forest area.
Tenn.	Cook	2	6/41	Strip plot 40 milacres. Northern exposure.
Tenn.	Cumberland	1	8/46	Rectangular $\frac{1}{2}$ A. plot. Checked 1941, temporarily abandoned.
Tenn.	Cumberland	2	8/46	Rectangular $\frac{1}{2}$ A. plot. Checked 1941, temporarily abandoned.
Tenn.	Carter	1	11/39	Strip plot 40 milacres.
Tenn.	Greene	1	5/40	Strip plot 60 milacres abandoned.
Tenn.	Greene	2	5/40	Strip plot 40 milacres.

# LOCATION OF RIBES REGENERATION PLOTS



SOUTHERN APPALACHIAN STATES

Legend:

X Counties wherein plots are located up to 12-31-41





Ribes Degeneration (Continued)

State	County & Plot No.	Ribes Species	Date Established	Remarks
W. Va.	Hardy	Rotundifolium	8/40	Square plot 100 milacres.
W. Va.	Hardy 1	Rotundifolium	8/40	.04 acre strip plot.
W. Va.	Hardy 2	Cynosbati	5/41	.12 acre strip plot.
W. Va.	Pendle- ton 1	Cynosbati and Rotundifolium	6/41	.04 acre strip plot.
W. Va.	Mercer 1	Cynosbati	6/41	.078 acre strip plot.
W. Va.	Mercer 2	Cynosbati	6/41	.08 acre strip plot.
W. Va.	Mercer 3	Cynosbati	6/41	.1 acre strip plot.
Va.	Augusta 1	Rotundifolium	8/37	Feter Seay tract, approx- imately $\frac{1}{2}$ -acre cut over land.
Va.	Augusta 2	Rotundifolium	8/41	Strip plot 260 milacres; near No. 1 uncut area.
Va.	Augusta 3	Rotundifolium	5/41	Strip plot 240 milacres; near No. 1 uncut area.
Va.	Augusta 4	Rotundifolium	8/37	Ramseys Draft - $\frac{3}{4}$ -acre.



GEORGIA

Plans provide for establishing some plots of R. curvatum during 1942.

MARYLAND

During 1937 and 1938 several large plots were established for the purpose of comparing the efficiency of dormant, spring and summer eradication. During the course of this work the ribes population on these plots was reduced to practically zero in the spring of 1938. They were examined in May 1941 and a record made of the regeneration. The results show the following regeneration during the growing seasons of 1938-1940 inclusive.

On 18 one-acre plots skunk currants were originally found at the rate of 2748 bushes with 5100 feet of live stem per acre. After three growing seasons seedlings were found at the rate of 3.1 per acre with 1.16 feet of live stem.

On 8 one-acre plots, R. rotundifolium were originally found at the rate of 157.1 bushes with 1098.4 feet of live stem per acre. After three growing seasons seedlings were found at the rate of 7 per acre with 5.1 feet of live stem. All of the above plots were in a stand of fairly dense hardwoods.

On 13 one-half acre plots, R. rotundifolium were originally found at the rate of 173.5 bushes with 4472.5 feet of live-stem per acre. At the end of three growing seasons seedlings were found at the rate of 0.6 per acre with 0.66 feet of live stem. These plots were on open ground with a heavy sod of glade grass, and were heavily grazed by sheep, cattle and deer.

It should be noted that the above regeneration applies to seedlings only and that unusually thorough eradication was performed, since they were study plots. These plots, or parts of them, may be observed again in 1943 or 1945, but unless a large amount of time is available for future examinations, they may be abandoned.

The Ribes regeneration plot at Bittinger in Garrett County, described on page D-2 of the 1940 annual report, produced ribes seedlings as follows on per acre basis:

<u>Year</u>	<u>1939</u>	<u>1940</u>	<u>1941</u>
<u>No. Ribes Per acre</u>	<u>1580</u>	<u>280</u>	<u>170</u>
<u>No. Feet Live Stem</u>	<u>513</u>	<u>149</u>	<u>59</u>

The 1939 data represents an accumulation of the live stem and bushes produced from May '35 to Sept. '39 or overlooked by the crew at the time of the last working, in May 1935. The 1940 data were taken in the spring of 1941 and represents the regeneration for one year plus anything overlooked in 1939. The same is true respectively for the 1941 figures.

## NORTH CAROLINA

None of the plots are old enough to give even tentative conclusions. A total of 12 plots have been established in five counties. In addition to taking data regarding the regeneration on typical ribes sites at different elevations and exposures, other factors are also considered. Plot 2 Watauga County is located on an area burned a short time before it was established and plot 3 is on a nearby site practically identical but not burned. Plot 3, Avery County includes 250 milacres and includes a powerline right-of-way and adjacent woods, which should show any difference in regeneration due to differences in available light.

## TENNESSEE

A total of seven plots were established up to the end of 1941. Two of these were begun in 1941 and therefore show no results to date. Two other were established in 1940 and to date have produced practically no new growth. One was placed in a R. americanum site in 1939 and to date shows little come-back.

The remaining two plots were laid out in 1936 in Cumberland county in cynosbati areas. Plot 1 originally had on a per acre basis, 678 bushes with 11,196 feet of live stem, which were eradicated in June 1936. In August 1941, after about five full growing seasons, the comeback from seedlings amounted to 184 bushes with 419.2 feet of live stem per acre. On Plot 2, bushes were originally found at the rate of 1296 per acre with 17,600 feet of live stem. Over the same period the comeback from seedlings was 160 bushes with 326.4 feet of live stem per acre.

Both of these plots were placed in ideal ribes sites and therefore probably represent about the maximum regeneration. The bushes were pulled at the time these plots were examined in 1941 and the plots will probably be abandoned.

It is planned to establish some plots of R. curvatum during 1942

## VIRGINIA

Four plots were established, all of which were in control areas and have to a large extent served their purpose. In 1937 one plot, covering about  $\frac{1}{2}$  acre on cut-over land, was begun. Observations were taken regarding the occurrence and rate of growth of seedlings. In 1941 two milacre plots were set up on non-cut-over adjacent land for the purpose of comparison. It was found that on the plot in cut-over land during four growing seasons there were found bushes at the rate of approximately 48 per acre with 320 feet of live stem. On the two nearby plots on which no cutting had been done, bushes were found at the rate of 4 per acre with 3.5 feet of live stem at the end of the same period. No data is available regarding the original ribes on these plots; however on the area as a whole they were found at the rate of approximately 18 per acre. Mr. Cramer, who was in charge of the eradication work, is of the opinion that originally many more bushes per acre were present on the site of the plots.

The fourth plot in Ramseys Draft was worked in Sept. 1937 at which time bushes were found at the rate of 264 per acre with 2176 feet of live stem.

In Sept. 1940, after three growing seasons seedlings were found at the rate of four per acre with two feet of live stem. The shade factor on this plot was similar to the uncut areas mentioned above.

It is planned to establish some milacre plots in the state outside of control areas during 1942.



## WEST VIRGINIA

Seven plots were established in the State, one in 1940 and the others in 1941. All are milacre plots and in control areas. The 1940 plot has not been examined since it was established. It is believed desirable to consider establishing additional plots outside any control areas during 1942.

### THE USE OF CHEMICALS ON RIBES CROWNS

The need for some means of killing roots and crowns which could not be eradicated has long been recognized. Some preliminary tests were made in 1940 using several different materials. Due to the pressing need for this, and the success in other regions, the use of a mixture of equal parts of salt and borax was practiced in all States. General and detailed observations of the results were made regarding the effectiveness of the material. The following is a resume of the detailed observations by States as reported by the State leaders.

#### NORTH CAROLINA

Prior to 1941 chemicals had not been used in connection with ribes eradication work with the exception of one or two cases. Salt had been used on a clump of decapitated red currant bushes growing in a rock wall at Mountain Meadows Inn in Buncombe County. As well as I recall, the clump of bushes was very large and probably extended over several square feet of surface and two or three pounds of salt were used with excellent results. The ribes had been cut off previously but had sprouted at that time but since the heavy application of salt no bushes have been reported found at this location.

In 1941 the practical application of chemicals in ribes eradication was begun with equal mixtures of salt and borax put up in three-ounce packages. Approximately 700 packages were used by the field crews, but very few second inspections were made to determine what percent of the bushes tested had failed to sprout. Agent Whitman treated about fourteen decapitated ribes in Avery County that were reinspected later in the season and it was found that the kill was a 100%.

Although we do not know what percent of the total bushes treated were killed, we feel that the use of chemicals to supplement hand eradication of ribes is very worthwhile and will save many dollars in the future. It is recommended that chemicals be a standard part of the equipment of all ribes eradication crews whether working exclusively on native ribes, cultivated, or on both.

H. B. Teague

#### WEST VIRGINIA

Tests were made using three ounces of salt and borax on 12 crowns of R. cynosbati and an equal number of controls in Pendleton county in October 1941. No determination of the results can be made until 1942.

A similar test was made using salt alone on August 1, 1941. About Sept. 15, 1941 the following results were noted.

Chart On Next Page

Treatment	Number of bushes	Number killed
2 ounces	1	11
3 ounces	1	11
4 ounces	2	10
CONTROLS	9	3

Nine ounces of salt-borax mixture were applied to each of eight large decapitated cultivated gooseberries in Summers County. No results will be observed until 1942.

Agent Ralph W. Welch writes Concerning His Experience With The use of Chemicals  
4/16/42

"I was reared in Ritchie County, and I remembered that my father had upon different occasions rid the pasture fields of undesirable hickory and oak sprouts by having as much of the roots removed as practical, then filling the hole with salt. I have seen this practiced by several farmers in that section of West Virginia, and it seems very effective.

"Therefore, when our eradication crews began to encounter increasing numbers of ribes that were extremely difficult or impossible to effectively eradicate by hand methods (Mercer county, winter of 1939-1940) I began using salt on such bushes. Since I was not completely sure of the effectiveness of the salt on ribes, its use was limited to those bushes whose root systems it was utterly impossible to remove with the small tools at our disposal, which type of bush was comparatively few. On many days, the crews would not find it necessary to use any salt; other days, several bushes would be treated, especially when cliffs were encountered. The dosages were not measured, but the amount of salt used per bush was left to the best judgement of him who applied it. In general, smaller bushes received smaller applications; larger bushes (root systems) larger applications. In all, some 50 pounds of salt were used from the time we first began using it until the time when the switch was made to salt and borax mixture.

"Although I did not keep a formal record of the number of bushes inspected to determine the percentage of kill, I did do such inspection in a general way in the the summer of 1940 and 1941. I found no instance of sprouting, from bushes treated, although I do not maintain that 100 per cent kill was achieved under all circumstances. I wish to point out that it was our practice to remove as much of the root system as possible, where possible, before applying the salt.

"In the summer of 1941 I decided to conduct some experiments and thus gather some definite data concerning the use of salt as a ribicide. I wished to determine the percentage of kill with various dosages, and also to determine the effectiveness of salt when applied directly on top of the crown, (that is, by clipping the bush just above the crown, and making no attempt to remove any part of the root system).

"Therefore, on June 24, I selected large cynosbati bushes, divided them into four groups of twelve each and staked them, using marks on the stakes to conform with the method of procedure in making the treatments. Using a small pruning shear, each of the 48 bushes were clipped at the exact point where the root crown began. Group number one (12 bushes) was left unsalted to serve as a check against the other groups.



Each of the remaining three groups of 12 bushes each was treated with two, three and four ounces of pure salt, respectively. In each case the salt was placed for the most part directly atop the crown with small portions of the dosage sprinkled outwardly from the crown center for about three inches. The following table summarizes the results:

GROUP ONE	GROUP TWO	GROUP THREE	GROUP FOUR
Clipped But Untreated (Check) 6/24/41	Clipped, Treated With 2 ozs. Per Bush 6/24/41	Clipped, Treated With 3 ozs. Per Bush 6/24/41	Clipped, Treated With 4 ozs. Per Bush 6/24/41
Examined 4/15/42 10 of 12 bushes sprouted 97% live stem 16.6% killed	Examined 4/15/42 1 of 12 bushes sprouted 7" live stem 91.6% killed	Examined 4/15/42 2 of 12 bushes sprouted 13 " live stem 83.3% killed	Examined 4/15/42 3 of 12 bushes sprouted 9" live stem 75% killed
	Probable Cause of Ineffect- iveness: No apparent reason.	Probable Cause Of In- effectiveness: No appar- ent reason. (1)	Probable Cause of Ineffectiveness See Footnote (2)

(1) Of those bushes treated with 3 ounces application, 2 out of 12 sprouted. There was no apparent reason for one of the sprouts. In the case of the second, however, it seems likely that it is not a sprout at all. It is a live stem apparently missed by the pruning shear when the original bush was removed.

(2) Of those bushes treated with 4 ounce applications, 3 out of 12 sprouted. All three can probably be explained by rapid wash-off before the salt had had sufficient time to make the kill. Two of these bushes were located on very steep ground, nearly perpendicular, and it is likely that the salt washed down grade away from the treated crown before it had penetrated deep enough to become effective. The third sprout was located in the very bed of a small ravine, and here, too, there is a strong suspicion that rapid wash-off contributed to the non-effectiveness of the treatment.

"Conclusions. Figuring the experiment as a whole, 83.3% of the treated bushes were killed. This demonstrated that salt is effective as a Ribicide. Personally, it seems to me doubtful if salt and borax mixture or pure borax would have been 100% effective on the four bushes excepted because of the steepness of the slope and stem which remained unsevered when the parent bush was clipped from the crown."

#### OTHER STATES

General observations in the other states indicate that the salt-borax mixture is getting satisfactory results. Plans are under way for more detailed observations on these chemicals, as well as other materials. Observations should also be made to determine the effectiveness of the treatment at different seasons of the year.

#### PINE INFECTION STUDIES

These studies have been carried on for some time in Maryland and Virginia. A similar study is being started in West Virginia. The results by plots are as follows:

MARYLAND-- Oliver Run Plots, in Garrett County

This series of plots were established in 1933 and is fully described in the 1939 and 1940 Annual Reports of Maryland. Only seven or 12.8% of the original fifty-five trees on the plots were living at the time of the last inspection (5/14/41). During the last year (June 1940 to May 1941), five trees died and fifteen additional cankers were found. Of the seven living trees probably six will die within the next year or two; the other one is relatively large and to date no trunk cankers were observed on it. The first 2 cankers on the plot dated back to 1930.

All of the trees were infected by 1937, that is in 7 years. Ten years after the first infection, 87.2 percent of the trees on the plot had died. This illustrates the rapidity of the blister rust in killing off young pine in a wild-ribes-bearing area. Details for each plot for each year may be found in Mr. Yost's Annual Report for Maryland for 1941, pp.21 and 22.

MARYLAND-- Deep Creek Lake Plots, in Garrett County

This plot was established in 1933 and is described in the 1939 and 1940 Annual Reports for Maryland. Of the 197 trees included in the study 195 or 98% were infected at the time of the last study (May 1941). Seventy-one or 36% have died up to the same date. During the last year (June 1940 to May 1941) nineteen trees have died. During the same period, 918 additional cankers became visible. The oldest canker found originated about 1931. Thus in 11 years 98.9 percent, or practically all of the white pines on the plot, were infected, with 36 per cent dead. The pines in this plot are much larger than the ones on Oliver Run. Details for each plot for each year may be found in the Maryland Annual Report for 1941, pp. 23-25.

VIRGINIA-- Reddish Knob Plots, in Augusta County

This plot was established in 1935 and is fully described in the 1940 report for Virginia. The following tabulation from the Virginia Annual Report by Mr. J. W. Luxe Jr. shows the progress of the disease.



1940  
 INFECTED WHITE PINE  
 REIDIST KNOB DRIVE  
 NEAR WEST VIRGINIA OVERLOOK

	Accumulated 1940	Totals 1941	INCREASE
Number of white pines	99	99	--0--
Number infected	44	56	12
Per Cent infected	44.14	56.56	12.42
<u>Cankers</u>			
Branch	120	175	55
Stem	1	5	4
Total	121	180	59
Average per tree infected	2.75	3.21	
Average per tree on plot	1.22	1.82	
<u>Canker age group</u>			
1932	1	1	--0--
1933	1	2	1
1934	16	15	--3
1935	18	17	--1
1936	23	23	--0--
1937	33	43	10
1938	27	70	43
1939	2	11	9
1940	--0--	--0--	--0--
TOTAL	121	180	59
Number of ribs on plot	20	20	--0--
Number of ribs-free grids	4	4	--0--
Average No ribs per acre	20	20	--0--

A plot of Pinus strobus was laid out in the late fall of 1941 in the Virginia Pine Areas. The first data will be submitted next year. The first and second Virginia Pine Areas are in pine areas of insufficient value to warrant such protection and therefore will show only the progress of the disease when no control measures are applied. This plot is in protected pine and is designed to show the effectiveness of forest thinning in controlling the disease.

The area was first worked in the late fall of 1941 when the pines were heavily infected. It was then "mopped up" in the spring of 1942. The next working was in the spring of 1943. At the time the site of the plot was studied many cankers were found on 1935 and 1934 intergrades, also some on 1942 wood. Canker counts on this plot should, within a few years, show clearly the results of the eradication work. Detailed data will be included in next year's annual report.

#### OTHER PINE STUDIES AND OBSERVATIONS

Two additional study plots were laid out in 1941 in Maryland, one was adjacent to the site of MCC Camp S-70 Garrett County, Maryland, to study the degree of blister rust infection from a comparatively high concentration of pines. The second was laid out on the Carpenter tract of the Green Ridge State Forest to study the damage to white pine by blister rust from fixed sources of live stems. The results will be available from these study plots for several years.

Another study was made in Maryland, which will appear shortly as a Technical Memo. This is entitled "A Comparison of Blister Rust Infection on Pines in Seven Protected Areas and Ten Unprotected Areas in Garrett County, Maryland, Six or More Years After the Initial Working."

A series of 22 Ribes Ecology Seminars of from 2 to 4 pages each was put out by the Richmond Office with the help of all Agents. These Seminars began July 2 and continued weekly through Nov. 25, 1941. They were designed to present in popular form for the Agents the ecological data concerning Ribes in the different States, and to stimulate their interest in studying and recording the different species in their habitats.

Session 3 prepared by R. E. Yost





Spread of White Pine Blister Rust in  
Southern Appalachian States in 1941

The present year 1941 has been one with the widest spread of the white pine blister rust in the Southern Appalachian States, the spread to new counties extending from Raleigh County, West Virginia to McDowell County, North Carolina, a distance of about 134 miles. A continuous belt of 16 new counties has been added to those in which the blister rust has already been reported.

These newly infected counties include Mercer, Monroe, Raleigh and Summers in West Virginia; Bland, Giles, Grayson, Pulaski, Smyth and Wythe in Virginia; Ashe, Avery, McDowell, and Watauga in North Carolina and Carter and Johnson in Tennessee. Although white pines were frequently examined in all of these counties the blister rust was found only on Ribes. In West Virginia all of the infected bushes were Ribes cynosbati, the prickly-berried gooseberry. In Virginia and North Carolina both cynosbati and rotundifolium the round leaf gooseberry, were found infected in about even numbers. In addition americanum the wild black currant were found at one North Carolina place. In Tennessee both infections were found on cynosbati.

In West Virginia there were eight new infection centers, in Virginia eight, in North Carolina seventeen and in Tennessee two, making a total of 35 new centers in 16 counties. A map is attached showing the number of infection centers in each county in the newly infected areas, as well as counties in which rust was found hereto fore, and in addition the white pine growing counties.

In West Virginia all infections were in white pine zones from 1,750 to 2,750 feet elevation. In Virginia the elevation of infected bushes ranged from 2,450 to 3,500 feet. In Tennessee the elevation ranged from 3,500 to 3,800 feet, while in North Carolina the elevation ranged from 3,000 to 5,000. In North Carolina a number of the infections were found above the white pine belt.

The infections were found from September 16 to November 6. All of the 17 infections in North Carolina showed telia while three in Watauga County also showed uredinia. In West Virginia both Uredinia and telia were found, In Virginia one infection showed uredinia while all eight showed telia. In Tennessee both infections showed telia.

For 25 of the 35 infections, data is available on the aspect or exposure of the site on which infected ribes were located. Fifteen places had a northern, northeastern, or northwestern exposure, four places had a southern exposure, three had an eastern exposure, one had a western exposure while two were on flat land. Infected bushes were for the most part medium to large in size, although at two locations in West Virginia they were small.

The explanation for the great spread this year in contrast to the slow spread in any preceding year is not entirely clear. Possibly, pine infections occurred in one or more of the four states, Virginia, West Virginia, North Carolina and Tennessee several years ago and that only in 1941 aecia spores were produced in abundance. While prevailing winds during the spring months were not northerly from the previously known centers of infection, there were days when northerly winds did occur. Some of the spread of rust may have been from infected pine in Bath County, Virginia or Pocahontas County, West Virginia, or counties further north. Aecia were noted on pine in Bath County, Virginia on June 6 and June 25.



According to monthly bulletins of the U. S. Weather Bureau on Climatological Data for the four States concerned, weather conditions in April and June were conducive to the spread of the rust from pine to ribes in the newly infected counties. There were several warm to hot days in late April with frequent rain fall and cloudy weather, and three continuous spells of rainy weather in June from the 1st to 5th; 8th to 15th and 23rd to 30th. Hot weather continued throughout June, making with the rainy weather ideal conditions for germination of aecia spores. In the northwestern counties of North Carolina rainy weather prevailed throughout July and August making conditions favorable for the spread of the rust from bush to bush in the uredinial stage. In southern Virginia and West Virginia rain fall for July was generally above normal. The spread of the rust must have occurred before the drought in the late summer.

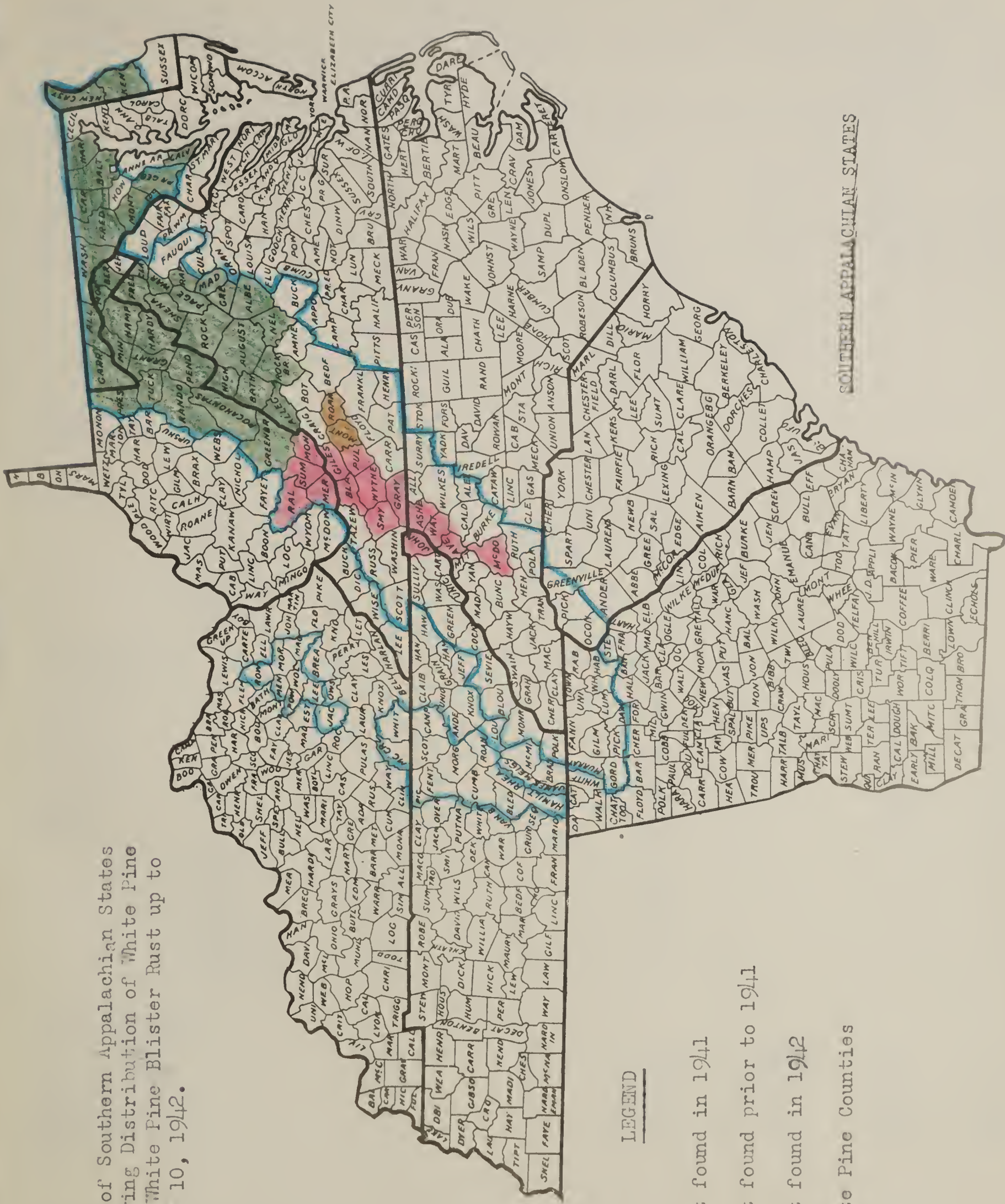
Agent Ralph W. Welch of West Virginia found the first new infection on September 16. He then trained his foreman and crew men in identification of the rust and they found five out of the eight new West Virginia infections, including the only infections found in two of the four counties. The first infection found in North Carolina was by Agent H. A. Whitman on October 1, while the first Tennessee infection was found by Messrs. J. Curtis Ball of the Richmond office and Agent J. Wilburn Lane of Tennessee on October 10. Others who participated in the search for the rust were State Leaders J. G. Luce, Jr., of Virginia, R. D. Tanksley of Tennessee, H. B. Teague of North Carolina, H. E. Yost of Maryland and Agents Oscar V. Coulter, George C. Cramer, Walter Stegall and R. G. Pierce.

#### PINE INFECTIONS

In addition to the above a pine infection was found for the first time in Bath County, Virginia at Dunns Gap; ribes had been found previously infected there in 1935.



Map of Southern Appalachian States  
Showing Distribution of White Pine  
and White Pine Blister Rust up to  
June 10, 1942.



# LEGEND

- Rust found in 1941
- Rust found prior to 1941
- Rust found in 1942
- White Pine Counties

SOUTHERN APPALACHIAN STATES





REPORT ON INVESTIGATIONS FOR RUSTY LICE  
IN SOUTHERN APPALACHIAN STATES - FALL OF 1941

STATE AND COUNTY		LOCALITY		SITE		PER CENT	
Infected	Non-Infected	Examined for Rust	Infections Found	Examined	Infections Found	Locations with Infections	Bushes with Infection

NORTH CAROLINA (2)

Ashe		4	2	186	12	50	6.4
Avery		19	9	1,051	58	47	5.
McDowell		1	1	3	3	100	100
Watauga		12	5	620	4	4.2	1.
	Alleghany	Several	-	Several	-	-	-
	Buncombe	1	-	50	-	-	-
	Haywood	Several	-	Many	-	-	-
	Mitchell	3	-	150	-	-	-
	Yancey	Several	-	Many	-	-	-

TENNESSEE (1)

Carter		3	1	23	1	33.3	1.2
Johnson		3	1	50	2	50.3	3.3
	Locke	1	-	200	-	-	-
	Putnam	1	-	105	-	-	-
	Greene	1	-	9	-	-	-
	Sullivan	1	-	8	-	-	-
	Unicoi	1	-	6	-	-	-

VIRGINIA (1)

Bland		5	3	51	3	40	14.3
Giles		7	3	45	3	23	14.
Grayson		7	1	113	4	14.3	3.5
Pulaski		1	1	12	1	100	8.5
Smyth		12	1	118	3	8.5	2.5
Wythe		3	1	10	1	33	5
	Amherst	4	-	11	-	-	-
	Bedford & Nelson	5	-	20	-	-	-
	Craig	15	-	500	-	-	-
	Fairfax	1	-	15	-	-	-
	Tazewell	3	-	25	-	-	-
	Washington	1	-	2	-	-	-

WEST VIRGINIA

Mercer (3)		5	3	1,800	200	60	1.1
Monroe		4	2	300	25	50	8.3
Raleigh (3)		2	2	197	2	100	1.
Summers		2	1	10	3	50	30.

See notes on following page.



(1) In Tennessee and Virginia after the blister rust was found in a county, no particular pains were taken to find other infections in the same county; rather were steps taken to locate infections in other counties.

(2) In North Carolina, however, repeated search was made to discover as many centers of infection as possible, since up to October 1941 no rust had been known in the state.

(3) In West Virginia in Mercer and Raleigh Counties leaf fall was well under way when inspections were made, hence the percentage of bushes infected may have been higher earlier in the season

#### Virginia Infections

A summary by Mr. J. G. Luce, Jr., is here given of all counties in which infections have been located giving dates when found first on ribes or pine, and the status at end of 1941.

#### YEARLY TABULATIONS OF BLISTER RUST INFECTIONS

1910 - 1941

County	Year Infection First Found		Probable Year Origin Of Oldest Canker	Remarks: Extent Of Infection in County at Present time, etc.
	Ribes	Pine		
1. Albemarle	1939	-	-	North west portion
2. Alleghany	1937	-	-	One locality. North- ern section. Slight.
3. Augusta	1932	1933	1922	Western portion Heavy in spots.
4. Bath	1935	1941	1936	Western section.
5. Bland	1941	-	-	Slight. Two spots.
6. Clarke	1940	1910	-	Heavy on ribes in spots.
7. Frederick	1931	-	-	Unknown
8. Giles	1941	-	-	Two spots. One Heavy.
9. Grayson	1941	-	-	One spot. Heavy.
10. Greene	1938	1939	1935	Western section. Heavy in spots.
11. Highland	1935	1937	1934	Throughout county. Heavy in spots.
12. Madison	1932	1933	1926	Western section. Heavy in spots.
13. Nelson	1934	-	-	One bush. Extent unknown.
14. Page	1932	1934	1926	Throughout county. Heavy in spots.
15. Pulaski	1941	-	-	One bush.
16. Rappahannock	1931	1934	1926	Western portion. Heavy in spots.

17. Rockbridge	1938	-	-	One bush. Western section. Slight
18. Rockingham	1934	1937	1932	Mostly western section. Heavy in spots.
19. Shenandoah	1938	1941	1936	In spots. Slight.
20. Smyth	1941	-	-	Medium infection
21. Warren	1938	-	-	Southwestern section
				Slight
22. Wythe	1941	-	-	One spot. Medium

#### Notes on New Pine Infections in 1941

County	Area No.	Location	Ownership	No. Pines infected	No. examined	Percent infected
Augusta	25F	Friddley Hollow	G W N F <sup>(1)</sup>	1	5	20
Bath	23	Baldwin Hollow	Private	9	75	12
	25	Hodge Road	"	5	42	12
	26	Barners Run	"	11	75	15
	0	Dunns Gap	"	1	5	20
	19	Warm Spgs. Gorge, S.	"	5	150	3
	22	Star Chapel	"	13	105	12
	20	Warm Spgs. Gorge, N.	"	1	10	10
	0	Poor House Road	"	24	130	18
	0	Muddy Run	"	1	35	3
Rappahan-Grid-E-24		Piney River	S N P <sup>(2)</sup>	1	1	100
Shenan- doah	Grid-X-24	Woodstock Gap	G W N F	1	12	8

(1)

GWNF = George Washington National Forest

(2)

SNP = Shenandoah National Park

This is the first year that <sup>pine</sup> infections have been located in Bath County, although ribes infections were found as early as 1935 in the county. It is significant therefore that of the 9 infection centers, only two showed as low as three per cent of pines infected, the other six showing from 10 to 20 per cent infected. Other counties with high per cent of pine infection are Augusta, Highland, and Rockingham on the west side of the Valley, and Madison, Page, and Rappahannock on the east side of the Valley.

In 1940, new infections on pine were as follows:

Augusta County 1 area - 31% infected

Highland County 8 areas - 8, 12, 15, 24, 31, 35, 50% infected

Page County 3 areas - 2, 3, 4%

Rockingham 3 areas - 8, 20, 26%

In 1940 old infection areas had pine infection as follows, as determined by canker elimination.

#### Shenandoah National Park

Madison County 4 areas 3, 25, 29, 50%

Page " 1 " 36%

Rappahannock" 1 " 33%



## George Washington National Forest

Augusta County	4 areas	0.4, 0.5, 0.7, 7.6%
Highland "	1 area	3.2%
Rockingham "	5 areas	0.2, 1.3, 1.6, 2.4%

The same areas in the National Park which showed high infection at end of 1940 had been worked by CCC labor which was quite inefficient. Their work did not prevent high per cent infection from occurring. On the other hand in the George Washington National Forest on 10 areas, the highest per cent infection was 7.6, next highest four, the other eight ranging between 0.2 and 2 per cent. In the Forest all work since 1935 has been done by the Bureau with WPA labor. The work was closely supervised and was responsible for holding down the infection to the low figures shown.

Summing up the infection conditions at the end of 1941; blister rust is generally distributed in the Shenandoah National Park in Madison, Page, and Rappahannock counties with per cent of infected pine ranging up to 50, 36, and 33 respectively. It is also generally distributed in the George Washington National Forest in Augusta, Highland, and Rockingham counties with per cents ranging up to 65, 11, and 5 respectively. The 65 per cent infection was in an unworked area on North River found in 1933. On state and private land it is generally distributed in Augusta, Bath, Highland, and Rockingham with per cents ranging usually from 3 to 20 in infected areas. Many areas in the Shenandoah National Park, George Washington National Forest, and on state and private land are free of disease. No rust is known in the Jefferson National Forest, although it has been found on ribes in eight counties in which the Forest is located viz: Alleghany, Bland, Giles, Grayson, Pulaski, Rockbridge, Smyth, and Wythe.

### West Virginia Infections

Infected pines have been found in six counties, but so far as known the infection is very light in four of them. A list of the counties follows:

County	Year of Pine infection	Probable year of oldest canker	Remarks
Hampshire	1940	1934	Single pine infected
Hardy	1939	1935	Small pine infection in Caplinger Hollow and on Waites Run.
Pendleton	1934	1922	Heavy infection along state line on Bother Knob, Cow Knob, Reddish Knob.
Pocahontas	1939	1935	One area had 30% infection on 1/10 acre near Dunmore.
Preston	1939	?	Single pine infection.
Tucker	1939	1935	Single pine infection on Monongahela National Forest at Horseshoe Forest Camp



## West Virginia Infections (continued)

A heavy infection is present in the George Washington National Forest in Pendleton County along the mountain top on the State line. In Rough Run it was present as early as 1922. This area, particularly, should be worked in 1944 since it was last worked in 1939. No study has been made lately of infection conditions in Pendleton County. In Pocahontas County on private land near Durbin a 30 per cent infection was found on a 1/10-acre plot resulting from heavy ribes infection in 1935. Trees averaged 630 per acre on the plot. Very likely other pine infections not yet located are present both in the George Washington National Forest in Hardy and Pendleton counties and the Monongahela National Forest in Greenbrier, Pocahontas and Tucker counties.

## Maryland Infections

Infections have been found on ribes in the 10 counties of Allegany, Baltimore, Calvert, Carroll, Frederick, Garrett, Harford, Montgomery, Prince Georges and Washington. White pines, however, have been found infected only in Allegany, Frederick, Garrett, Montgomery and Washington. Infections are heaviest in Garrett and Allegany. In the former, small unprotected lots have had up to 100 per cent of the pine infected in less than 15 years. For details consult Maryland annual report for 1940, Pages 4 to 5-A inclusive.

## North Carolina Infections

Blister rust was found in 1941 in the four counties of Ashe, Avery, McDowell and Watauga. Ashe County adjoins newly infected Grayson County, Virginia on the south. These four infected counties in North Carolina form a continuous string to within 23 miles of the South Carolina line. Only the one county of Henderson lies between McDowell County, North Carolina and the border of South Carolina. The rust was found for the first time in North Carolina on October 1, 1941 by Agent Whitman on one Ribes rotundifolium leaf on the first peak of Grandfather Mountain in Avery County at an elevation of 5,000 feet, some three miles from Linville. Mr. Teague was assisted in the survey for infections by Messrs. Ball and Yost, and the North Carolina agents Whitman, Coulter and Ferguson. Credit must be given Agent Whitman for his indefatigable search for the rust, 12 of the 17 spot infections having been discovered by him. The number of infections on ribes (none being found on pine) was as follows:

Ashe County	2 locations	2 <u>cynosbati</u> and 10 <u>americanum</u> infected
Avery "	9 "	10 " " 48 <u>rotundifolium</u> "
McDowell "	1 "	3 <u>rotundifolium</u> infected
Watauga "	5 "	3 <u>cynosbati</u> and 3 <u>rotundifolium</u> infected

Six of the 17 infections were found above 4,000 feet elevation. Data are available on proximity to white pine in 14 cases. In four cases the nearest white pines were from  $\frac{1}{2}$ -mile to three miles distant; in one case pine was  $\frac{1}{4}$ -mile away and in nine cases white pines were only 10 to 50 yards distant. Pines averaging 50 trees and over per acre were noted in only one case as being near the infected gooseberry bushes. The presence of white pines even though in scattered stands or as small groups near infected ribes in 1941 leads me to predict that new centers of infection on pine will be found in these four counties in from two to four years.

## Tennessee Infections

State Leader Tanksley and Agents Lane and Stegall, together with Messrs. Ball and Yost, scouted for the rust in Tennessee. Ribes were examined in seven counties to the number of 488 bushes at eleven different locations. Blister rust, however, was found at only two locations, both close to the Tennessee-North Carolina state



Tennessee Infections (continued)

line, in Johnson and Carter counties. The first infection was found on October 10, 1941 by Mr. Ball and Agent Lane in Johnson County at Willen Gap on the eastern side of the Forge Creek watershed. Two out of 20 Ribes cynosbati were found lightly infected with rust in the telial stage. Nearest pines were 200 yards distant. Elevation was 3,500 feet. The second infection was found on October 11, 1941 by Messrs. Lane and Yost on one of 75 cynosbati examined in Carter County on Hampton Creek,  $1\frac{1}{2}$  miles west of the North Carolina state line, telia being present. The nearest white pines were one mile distant. Elevation was 3,800 feet.

## INFORMATIONAL ACTIVITIES

In 1941 practically the same informational activities were conducted by the Agents and State Leaders as have been carried on in the past. The following summary shows the extent of these activities in tabular form.

### Informational Services - Calendar Year 1941

ACTIVITY	GA.	MD.	N. C.	TENN.	VA.	W. VA.	ALL STATES
Meetings	16	2	6	1	11	1	37
Attendance at Meetings	1637	47	247	16	364	53	2364
Items Published			18	6	153	3	180
Demonstrations Placed				84	6		90
Initial Interviews	576	22	175	1804	96	83	2756
Follow-up Calls	292	17	132	97	11	24	573
Individuals Instructed		19	326	356	266	62	1029
Publications Distributed	3093	281	504	1901	735	196	6710
Posters Placed	193		65	71	8	8	345
Exhibits	13	1	3		1		18

The attendance at meetings has been increased from 2,056 in 1939 to 2,172 in 1940, and 2,364 in 1941. The number of news items has increased from 50 in 1939 and 20 in 1940 to 180 in 1941, the increase being largely in Virginia. The number of initial interviews has varied from 4,164 in 1939, 2,525 in 1940, to 2,756 in 1941. The number of individuals instructed has varied from 2,663 in 1939 to 910 in 1940 and 1,029 in 1941.

The distribution of publications has continued on a large scale; 6,458 in 1939; 7,544 in 1940 and 6,710 in 1941. Posters were put up as follows:-418 in 1939; 212 in 1940 and 345 in 1941. Some details concerning the above activities are noted below.

### LECTURES WITH MOTION PICTURES, FILM STRIPS AND SLIDES

In Georgia on February 18 State Leader Zimmer showed the colored motion picture film on blister rust and white pine, prepared by him and the Assistant State Entomologist Murphey, before the North Georgia College botany class at Dahlonega. In May Mr. Zimmer and Mr. Murphey took 250 feet of technicolor film of logging operations in Rabun County to add to their already excellent film. In August Mr. Zimmer exhibited the film in Rabun and adjoining counties, and on September 11 showed it at the Fannin County Fair to a good attendance.

In Maryland on January 17 Mr. Yost gave a lecture before the students of the University of Maryland in their Plant Disease Control class, which was also attended by other students and professors of the Botany Department. Kodachrome slides of Maryland scenes were shown. About March 15 Mr. Yost discussed blister rust before a meeting of forest fire control men of Allegany, Frederick, Garrett and Washington counties.

In North Carolina Mr. Teague gave a lantern slide talk near Weaverville in Buncombe County at Brittain's Cove Church during the week ending February 22. About July 2 a lantern slide talk was given to the biology class in the high school at Boone, in Watauga County. On July 9 a slide talk was given at Camp Yonahnowa in Linville, in Avery County, to 105 boys and councillors. This was well received and later in the month the boys at this camp were credited with 20 hours work on flank checking through the camp property. Agent Whitman secured this cooperation. There is good pine at the camp including two white pine hedges.



About November 1 Agent Whitman gave a talk on blister rust control to 50 biology students at Lees-McRae College at Banner Elk, in Avery County. About November 29 he exhibited a movie strip on control work (taken by himself) before 150 high school students of Avery and Watauga counties. In weeks ending December 13 and 27, respectively, Whitman gave talks accompanied by slides before 38 young people at Linville and before a group of townspeople at Newland, in Avery County.

In Virginia on July 5 State Leader Luce made an address and showed a blister rust film strip to 50 students and teachers from Madison College and various high schools in Harrisonburg. This address followed a conservation movie of the George Washington National Forest and was given through the courtesy of the U. S. Forest Service in their Harrisonburg office. After the pictures the students left on a "show-me" field trip through the Forest. At the pine infection plot near Reddish Knob they were met by Agent Cramer and shown the different species of ribes on the plot, infections on both ribes and white pines, and the purpose of the plot was explained to them.

During the months of July and August Agent Cramer gave a weekly lecture on blister rust control at the Washington Girl Scout Camp in the George Washington National Forest. Following this lecture the group of girls, which averaged sixteen in number, was taken into the woods and put to work on ribes eradication. A total of eight lectures was given to 126 individual Girl Scouts. These Girl Scouts have been doing ribes eradication around their camp and in the National Forest nearby ever since 1937.

On August 19 Mr. Luce addressed 45 girls and boys at the 4-H camp near Fort Valley in the Massanutten Range. On October 10, by special request, as a result of the Staunton Fair exhibit, he showed the blister rust film strip and kodachrome slides to approximately 125 students and teachers at the Virginia School for the Deaf and Blind at Staunton. Mr. Luce has now 70 kodachrome slides taken within Virginia and plans to increase that number to 150, if possible.

In West Virginia State Leader Ashcroft attended the summer field meeting of the personnel of the State Conservation Commission at the Seneca State Forest in Pocahontas County and gave a talk on blister rust control.

NOTE: There has been an increase in late years of talks or lectures on blister rust control before the young people of various camps, followed by control work carried on by the same girls and boys on their own and adjoining property, on National Forests and on National Parks. In Maryland Mr. Yost was successful with this type of activity in former years. The State Leaders and Agents of North Carolina and Tennessee attended a three day school for the study of fire prevention near Gatlinburg, Tennessee in October. This was held by the Park Service in the Great Smoky Mountains National Park. The discussions were considered very much worthwhile.

#### PUBLICATIONS

Technical Memoranda - On October 1, 1941 Messrs. Pierce and Yost put out as a mimeographed paper Technical Memorandum No. 1 (of the Southern Appalachian States) entitled "An Analysis of Ribes Eradication on Twenty Pine Areas in Garrett County, Maryland on which Ribes Eradication Has Been Carried on Several Times Between 1933 and 1941, Inclusive." On November 21, 1941 Technical Memorandum No. 2, written by H. E. Yost, J. G. Luce, Jr., and J. C. Ball, entitled "Study of Ribes Regeneration in Southwestern Virginia" was distributed.

A list of other Technical Memoranda issued from the Richmond office is herewith given for purposes of reference. See following page.



Tech. Memo. A - "White Pine Blister Rust Rapidly Killing Pine in Unprotected Areas of Garrett County, Maryland," by H. E. Yost, July 10, 1940.

Tech. Memo. B - "Report of Maryland Tests in 1940 to Determine the Ability of Different Substances to Kill the Root System of Decapitated Ribes Bushes" by H. E. Yost, October 10, 1940.

Tech. Memo. C - "Field Tests on the Susceptibility of the Southern Gooseberry, Ribes Curvatum, to Cronartium Ribicola" by H. E. Yost, December 5, 1940.

Tech. Memo. D - "Silviculture of White Pine" by Roy G. Pierce, May 13, 1941.

Tech. Memo. E - "Field Studies in the Southern Appalachian States - 1940" by Roy G. Pierce, June 15, 1941.

Seminars - A series of 22 weekly mimeographed papers entitled "Ribes Ecology Seminars" was put out by the Richmond Office and sent to all Agents. These papers were for the purpose of stimulating interest on the part of the leaders in a study of the ribes plants themselves and to bring together in one place the available knowledge of the genus Ribes as found in the Southern Appalachian States. The material was supplied largely by the field personnel. From all accounts the papers achieved their purpose.

Maryland Publications - In 1941 State Leader Yost of Maryland prepared a mimeographed paper of four pages entitled "Factors to Consider in the Planting of White Pine in Maryland, with Particular Reference to the White Pine Blister Rust." This paper was mailed to 35 vocational agriculture teachers, 17 county agriculture agents and four assistant agriculture agents throughout the western part of Maryland.

Mr. Yost's paper entitled "Field Tests on the Susceptibility of the Southern Gooseberry, Ribes Curvatum, to Cronartium Ribicola" was published in "The Plant Disease Reporter" issued by the Division of Mycology and Disease Survey of the Bureau of Plant Industry in Volume XXV, No. 3 dated February 15, 1941, Pages 97 and 98. This paper gave the results of tests on 35 bushes of Ribes curvatum from Murray County, Georgia which were transplanted to the vicinity of Swallow Falls, Garrett County, Maryland. In these tests Ribes curvatum appeared to be about equal in susceptibility to cynosbati, hirtellum, and glandulosum.

Virginia Publications - Mr. G. T. French, Chief Botanist and State Entomologist of the State of Virginia, in the annual report for 1940-1941 of the Department of Agriculture and Immigration of Virginia wrote a section on white pine blister rust, Pages 82 and 83, in which he summarized the work of our organization during the calendar year 1940. This was published September 25, 1941.





# CHECKING

State	Advance		Post		Regular	
	Acreage	No. 8-hour Checked Man-Days	Acreage	No. 8-hour Checked Man-Days	Acreage	No. 8-hour Checked Man-Days
Georgia	2719.0	217.0	-	-	-	-
Maryland	91.1	70.0	144.7	131	11.0	17.0
N. Carolina	171.2	- (1)	91.5	103	334.6	224.0
Tennessee	178.4 (2)	- (1)	-	-	4.0	11.0
Virginia	303.6	0.75	1207.0	221	71.2	3.5
West Virginia	3170.0	1582.00	3338.83	603	1293.76	336.0
Totals	6633.3	1869.75	4782.03	1058	1714.56	591.50

(1) Charged to eradication

(2) Omitted from annual statistical tables through error.

Significant to note from the above summary is the fact that the post checking accomplished in 1941 represents an increase of 4392 acres over that in 1940. It is evident that the field men are realizing more and more the importance of systematic post checks; not only in showing a fairly accurate picture of ribes conditions for laying out reeradication work but also in revising old pine area maps.

Following is a brief summary by states on checking work accomplished during 1941:

Georgia: Only advance checks were conducted in Georgia during 1941 in conjunction with preeradication surveys, all such work being carried on in Fannin, Gilmer and Rabun counties. No wild ribes were found on any of the 2719 acres checked.

Maryland: Advance, Post and Regular checks were conducted in Maryland during 1941. Many of the areas advance checked showed so many ribes that it was decided not to work them; not only because of high ribes concentration but also because of poor white pine and a high percentage of infection. All areas post checked were also remapped and control zone boundaries corrected accordingly. All post checking was done in connection with remapping of old pine areas in Garrett Co.

North Carolina: Checking in North Carolina was carried on in five counties during 1941; namely, Avery, Haywood, Mitchell, Watauga and Yancey. All advance checks were conducted in Watauga County in conjunction with preeradication surveys. No wild ribes were found on the 6848 acres covered on the 2½% advance check, all acreage being classed as blackout. Of the 69 areas having regular checks, 12 areas, or 17%, were in need of re-working. Of 62 areas post checked 18 areas, or 29%, were in need of reeradication. The greater amount of rework needed was in Haywood County in the Great Smoky Mountain National Park which was worked by CCC crews in 1940.

Tennessee: Since there was very little ribes eradication carried on in Tennessee during 1941, little checking was done. The four acres of regular check was conducted on two small eradication jobs in Cocke County. Actually advance checks were carried on in conjunction with preeradication surveys but were not reported by the State Leader in the Omnibus tables. Since the survey was based on a 2½% check approximately 5675 acres should have been charged to advance checking on the 227,000 acres covered. Actually only 178.4 acres were reported on the checking sheets for advance checks. No wild ribes were found on any of the 227,000 acres covered which included



Washington, Cooke, Blaine, Sevier, Sullivan, and Blount counties.

Virginia: Advance, Post and Regular checks were conducted in the following counties in Virginia during 1941: Augusta, Madison, Page, Rappahannock, Rockingham and Greene. Of 38 grids advance checked, 18 areas were found with ribes and in need of working. Most of these areas were in Augusta County on the George Washington National Forest. Post checks were conducted on all or portions of 108 grids. Of this amount it was found that 36 areas, or 33% were in need of reeradication. Most of the areas needing reeradication were on the George Washington National Forest and the Shenandoah National Park. Regular checks were carried on in conjunction with ribes eradication. Of six grids which had regular checks three were in need of reworking, all of which were on the Shenandoah National Park in the Hawksbill area.

On July 22, 1941 Mr. Martin Q. Miller was employed by the National Park Service as a checker on the Shenandoah National Park. Most of his time was spent post checking priority white pine areas previously worked by WPA and CCC crews. Following is a summary of Mr. Miller's work on the Shenandoah Park as reported by Mr. Robert B. Moore, assistant Park Forester.

#### Summary of Checking on the Shenandoah National Park

Area	White Pine	Control	Acres	Checking	Eradication	
No. and Name	Acreage	Acres	Checked	Ribes, A	FLSA	Recommended (Acres)
1. Hawksbill	316	890	50.5(1)	21	298	188
2. Pinnacles	44	390	16.7	11	212	250
3. Skyland	57	335	15.2	27	794	226
4. Big Meadows	127	1000	49.8	12	530	733
8. Spitler	14	175	9.2	7	325	45
14. Pass Mountain	103	533	31.2	4	56	208
15. Neighbor Mt.	22	165	6.7	-	-	-
17. Elkwallow Gap	85	425	21.7	5	43	145
25. Hughes River Gap	20	243	9.9	44	1018	- (2)
28. President's Camp	39	273	9.8(3)	8	185	250
Totals	827	4429	220.5	12.1	350.1	2045

(1) Includes 46.8 acres of regular checking.

(2) Area discontinued.

(3) Includes 1.2 acres of advance checking.

Total man days-(checker)	49	Cost	\$350.00
Total man days-(CCC assistant)	22.4	Cost (@ \$1.50 per man day)	33.56
Totals	71.4		\$383.56

Acres covered per man day--62.0

Cost per acre covered -----\$ .09

The Hughes River Gap area was discontinued because of heavy ribes concentration and very low pine density.

Detailed checking maps were made of all areas checked, with areas recommended for working outlined thereon. It was found necessary in most cases to extend the protective zones in order to assure full protection to the white pine.

The services of a checker on the Shenandoah National Park were found very advantageous and it is hoped that a checker can be employed for several months during the fiscal year 1943.

West Virginia - A good deal of checking was done in West Virginia during 1941 by Hardy, Mercer, Monroe, Summers, Doddington, Thompson, Bridges and Roccantese. A total of 7802.6 acres was checked. As a result of advance checks a total of 90,717 acres was blocked out as ribes-free. Most of the post checking was done in Mercer and Pocahontas counties. Out of 72 areas post checked, 29 areas, or 40%, were found to be in need of reeradication. Out of 109 areas reported as having a regular check only 4 areas showed need of reworking in 1941.

It is now believed that the importance of systematic checking is well understood, not only for the purpose of determining the effectiveness of ribes eradication but also for the purpose of plotting in ribes concentrations on a map for present and future work. Old boundary lines can also be relocated and where necessary reestablished. White pine counts can also be made at the time of post checking in order to determine whether an area in relation to pine values and ribes density, is worth maintaining.





## SUMMARY

In 1941 rice eradication was completed in 125,144 acres of 1940-1941 infested North Carolina, Tennessee, Virginia and West Virginia and Texas from 1940. Eradication worked under the WPA in all six states, under Federal and Cooperative Funds in Georgia, North Carolina, Virginia and West Virginia, and under either the CCC or CCC-adjunct in Maryland and West Virginia.

### SUMMARY OF RICE ERADICATION 1941, and 1918-1941 inclusive

Table 1

YEAR	Acres worked	NUMBER OF RICE PLANTS DESTROYED			No. 8-hour man days
		WPA	CCC	Total	
1941	616,872	2,046,880	45,866	2,092,746	24,943
1918-1940	6,783,715	27,873,046	1,227,070	29,100,116	168,279
Total 1918-41	7,399,587	29,919,926	1,272,936	31,192,862	193,222

YEAR	NUMBER RICE PLANTS DESTROYED		Man Days for Acre	Cost	
	Per 8-hour day	Per Acre		Total	Per Acre
1941	88.86	3.39	1.00	\$70,884.12	\$1.16
1918-1940	111.90	4.10	1.00	\$27,873,046 (1)	1.095
Total 1918-1941	100.38	3.74	1.00	\$710,730.72	\$1.097

(1) Cumulative figures increased from \$27,873.04 in 1918, to \$27,873.04 in 1940.

In 1941 there was a decrease of 13.5% in special work, with 18% less labor. Increase in acreage was 9%, in number plants 30.7%, compared with 1940.

## BY PROJECTS

Detailed statistics on labor control by States may be found in the omnibus statistical tables in Section A, while more detailed data may be found in Tables 4 and 5, and in Section C on expenditures. The following table shows the results of rice eradication by Projects.

### SUMMARY OF RICE ERADICATION

Table 2

PROJECT	Acres worked	NUMBER OF RICE PLANTS DESTROYED			No. 8-hour man days
		WPA	CCC	Total	
Fed WPA	340,643	1,488,770	38,348	1,527,118	16,215
State WPA	254,154	473,702	9,517	483,219	5,777
Subtotal-All WPA	594,797	1,962,472	47,865	2,010,337	22,992
CCC (BCW)	7,736	57,450	312	57,762	1,490
Subtotal-All Energy	602,533	2,019,922	48,177	2,068,099	24,482
Reg. & Coop.	13,318	14,902	187	15,089	211
Total -- All Projects	615,851	2,034,824	48,364	2,083,188	24,693



Table 2 (Continued)

1941

PROJECT	NUMBER RICES DESTROYED		Man Days	Acreage	COST	
	Per Man Day	Per Acre	Per Acre	Worked Per Day	Total	Per Acre
Fed. WPA	94.2	4.48	.048	21	\$47,446.36	\$.1392
State WPA	72	1.92	.027	37.5	18,498.63	.0728
Subtotal - All WPA	87.9	3.38	.038	25.9	65,944.99	.1108
CCC (ECW)	35.4	7.72	.218	4.6	3,225.50	.4170
Subtotal - Emerg. Projs.	84	3.44	.040	24.4	69,170.49	.1148
Reg. & Coop.	62.5	1.13	.018	55.3	1,782.33	.1337
Total - All Projects	83.9	1.33	.040	24.7	\$70,953.12	\$.1150

During 1941 work under the Regular Cooperative Project was increased more than 330% as to man days of labor expended, partially because of the use of Lea Act funds. This resulted in a much larger increase in acreage worked (over 1000%) and bushes pulled. There was a small decrease in acreage worked by WPA, represented by a slight increase in Federal WPA and a considerable decrease in State WPA. There was a decided decrease (over 300%) in acreage worked by the CCC.

The percentage of acreage covered by the different projects in 1941 is compared below with that for 1940:

	1941	1940
Regular Cooperative	2.1	.2
Federal WPA	55.4	49.4
State WPA	41.2	45.4
CCC	1.3	5
	100	100

SUMMARY OF RIBES ERADICATION  
1918-1941 Inclusive

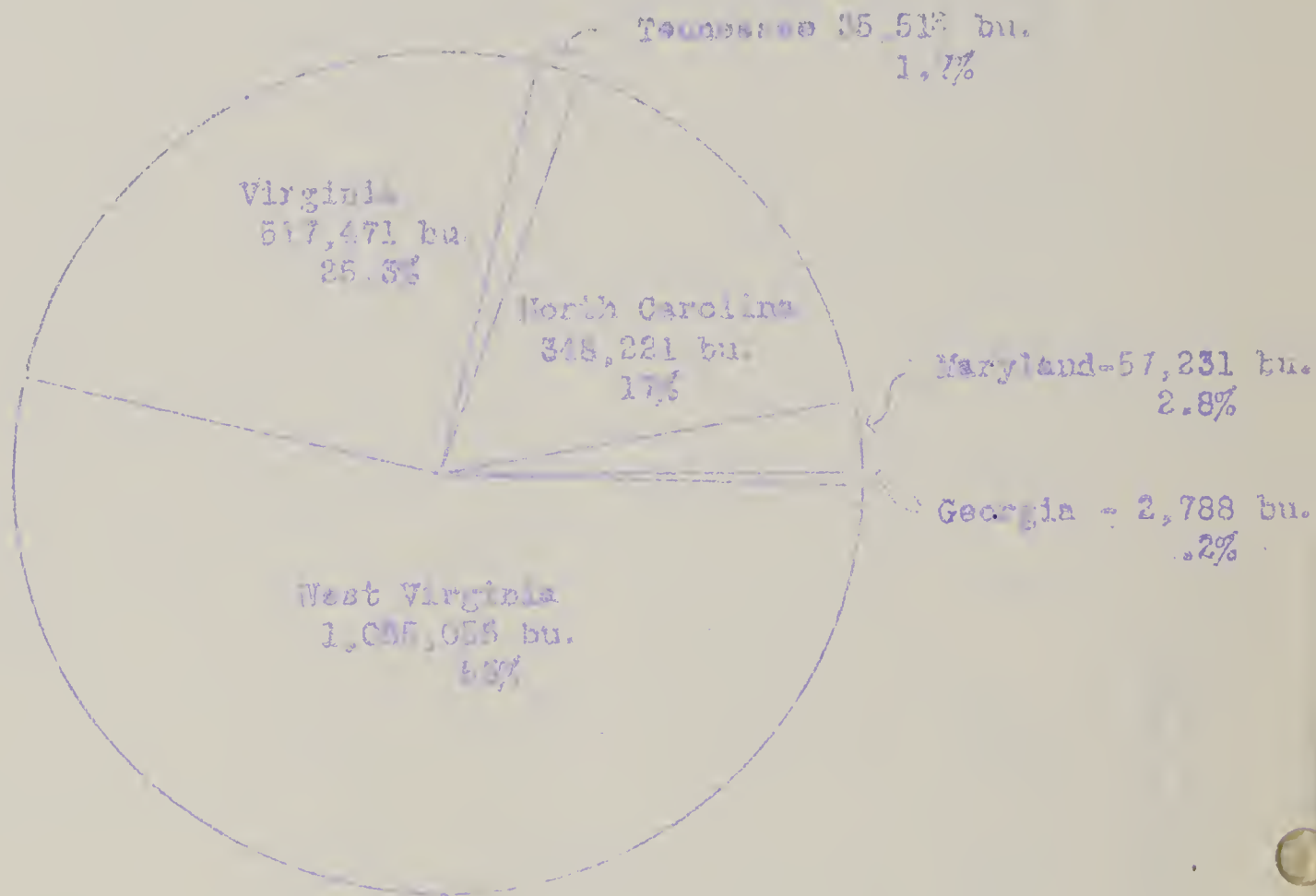
Table 3

PROJECT	Acreage Worked	Number Ribes Destroyed		No. 8-hr Man Days	Number Ribes Destroyed Per Man Day		Man-Days Per Acre	Acres Worked
		Wild	Cultivated		Per Man Day	Per Acre		
Fed. WPA	4,677,951	21,722,023	1,084,749	193,870	117.6	4.87	.041	2,111
State WPA	588,738	1,878,433	13,554	25,910	73	3.21	.044	2,111
Subtotal All WPA	5,266,739	23,600,462	1,098,403	219,788	112.4	4.68	.041	2,111
CCC	439,588	3,399,141	10,441	42,840	79.6	7.76	.097	1,111
IWA	1,585,219	2,448,711	187,024	19,228	137.1	1.66	.012	1,111
Subtotal All Groups	7,291,546	29,448,314	1,295,868	281,856	109.1	4.21	.038	2,111
Regular-Coop.	198,939	269,411	5,513	1,396	196.9	2.54	.012	7,111
GRAND TOTAL	7,490,485	29,717,725	1,301,381	283,252	109.5	4.19	.038	2,111

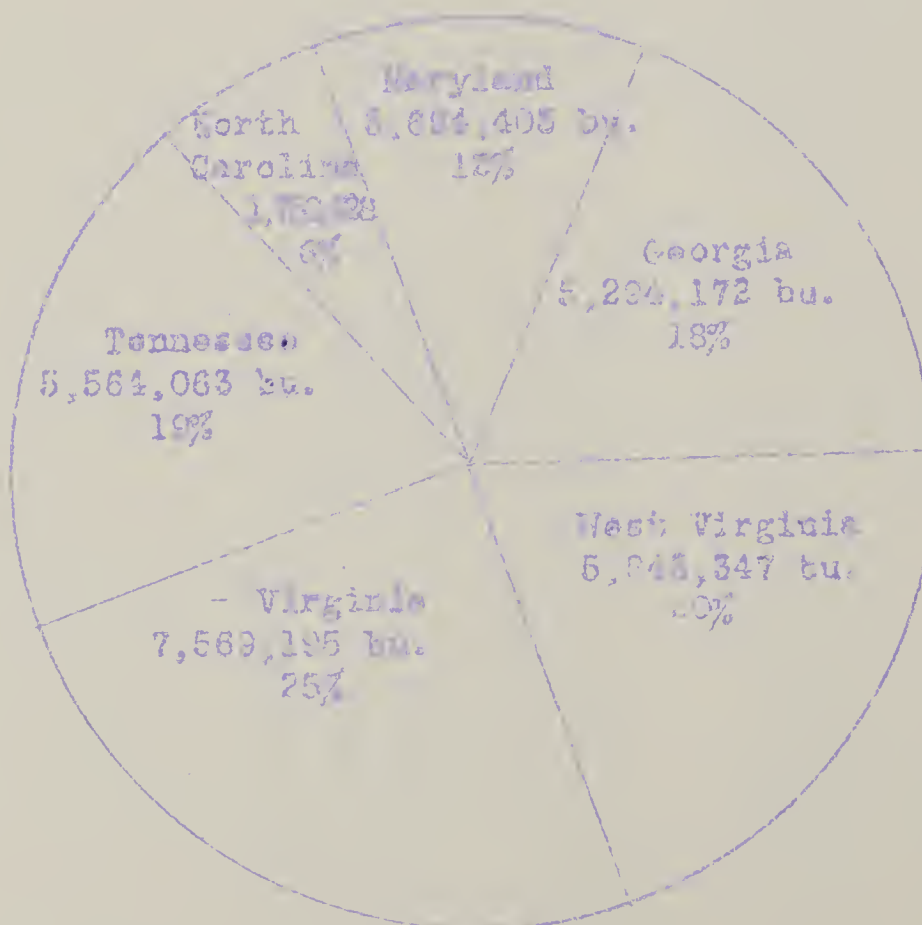


Graph showing distribution of cotton in 1941  
and from 1918 to 1941 by States

1941  
Total - 2,046,280

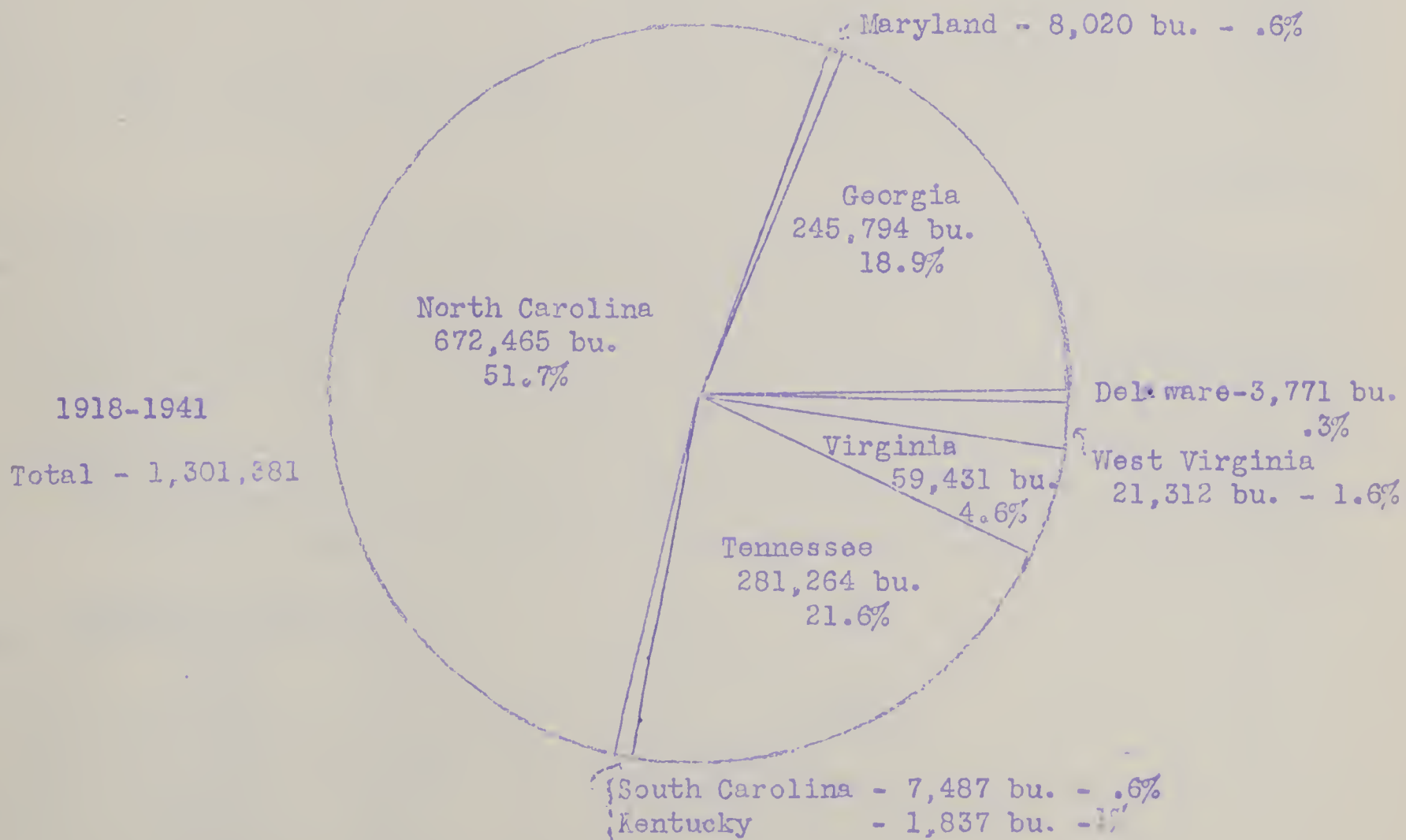
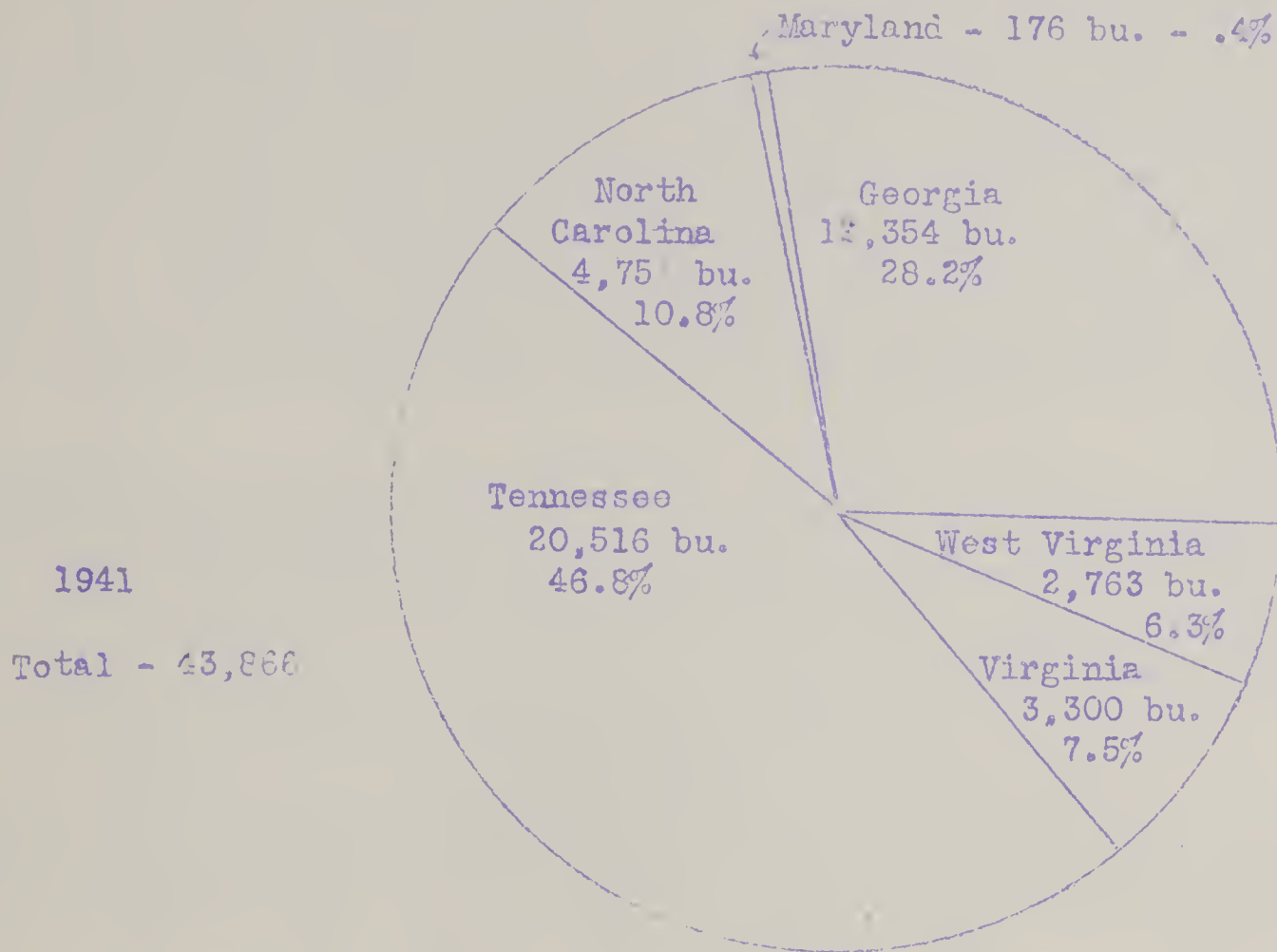


1918-1941  
Total  
29,717,725



21 bu. pulled in Del.  
2096 bu. pulled in Ky.

Graphs showing cultivated ribbon pulled in 1941  
and from 1918 to 1941, inclusive, by State





Details by working on acreage worked, and man days of bushes are to be found in Table 1 and 2, of the omnibus tables in Section 2 of this report. Details for 1941 on eradication cost for each state and each working are to be found in following pages of this section. In 1941, 77.7 per cent of the acreage worked was initial, and 22.3 per cent rework, while only 43.2 per cent of the bushes destroyed was on initial work and 57.8 per cent on rework. The acreage initially worked dropped from 563,636 in 1940 to 479,017 in 1941, while on rework the acreage covered was increased from 92,185 in 1940 to 136,855 in 1941. As a whole, however, the acreage worked dropped from 655,821 in 1940 to 615,872 in 1941. The total man days labor dropped from 28,663 in 1940 to 24,923 in 1941. Through 1941, 5,350,300 acres were reported initially worked. This represents 98.1 per cent of the estimated control acreage in the region, the latter being 5,453,181 acres. 2,048,785 acres have been reworked. Of the bushes destroyed since the work in the region began, 25,779,101 were destroyed in initial work and 5,240,005 in rework, representing 83 and 17 per cent respectively of the total number (31,019,106).

Initial working has been completed in Delaware, the District of Columbia, Kentucky, Maryland, North Carolina and South Carolina. In the other four states of Georgia, Tennessee, Virginia and West Virginia data based on total estimates of control area and the acreage initially worked indicate over 93 per cent of the control area has been given initial protection.

#### SUMMARY OF ACREAGE WORKED IN 1941

Table 4

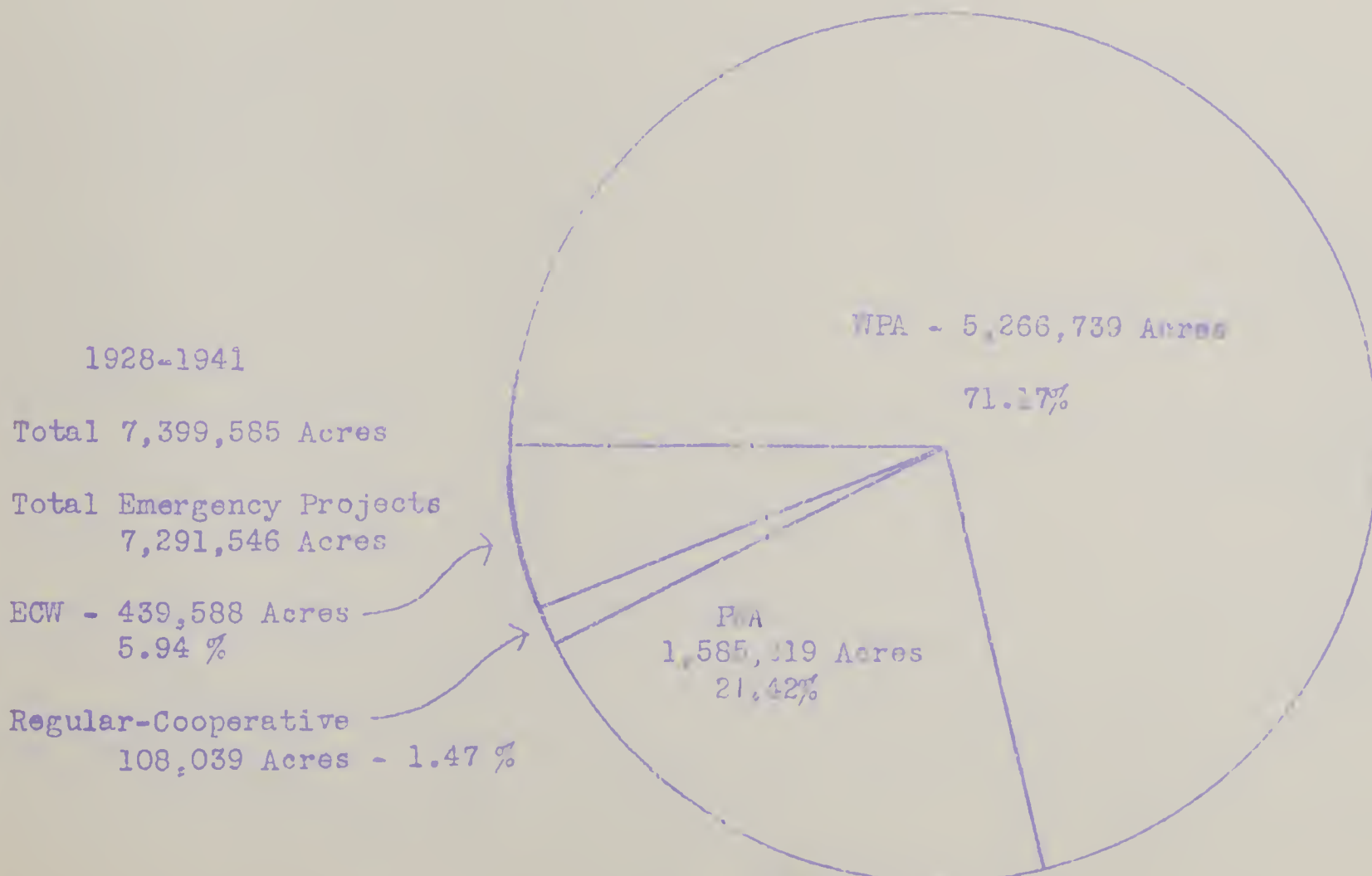
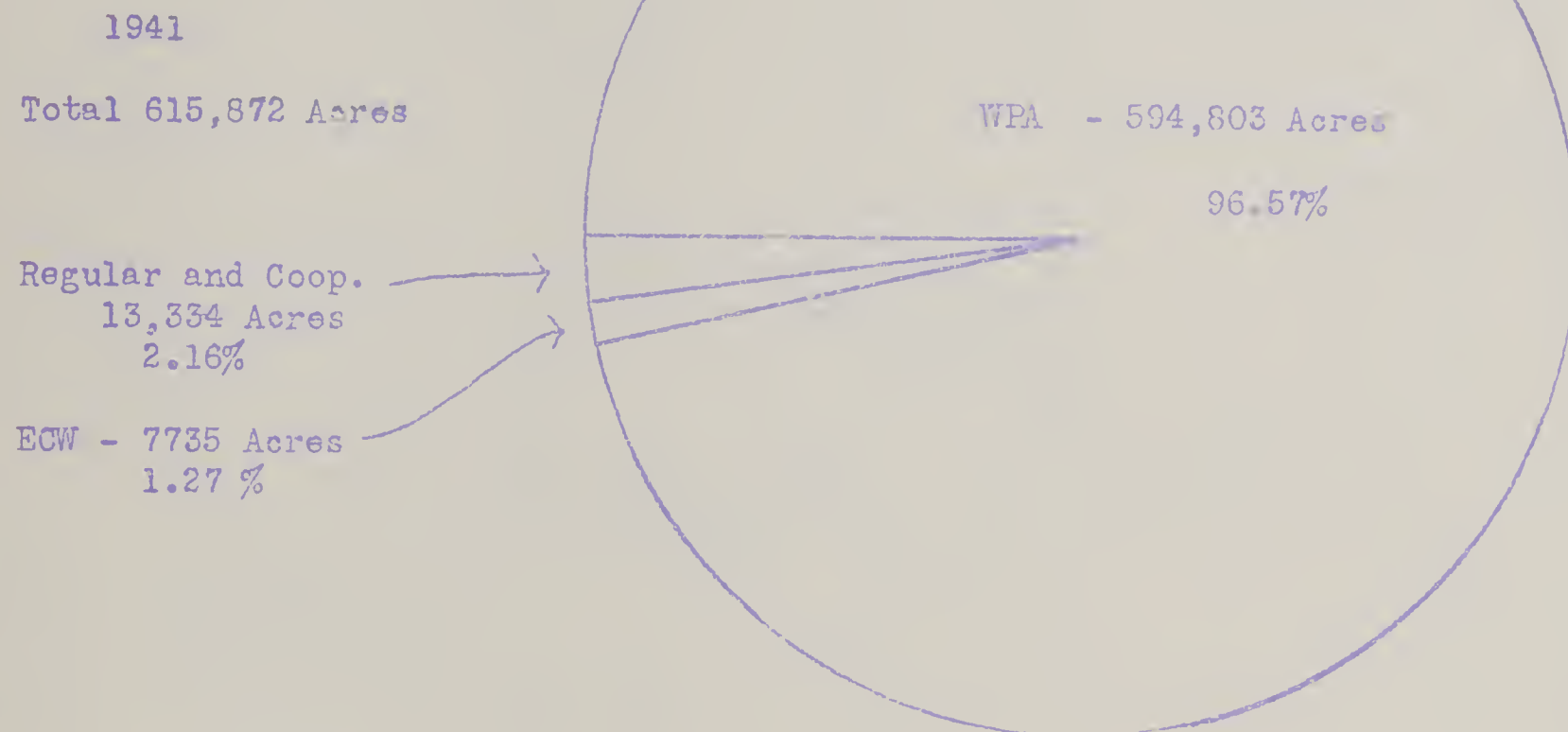
Table 4		By Working Acreage Worked						
State	1st	2nd	3rd	4th	5th	6th	7th	Total
Georgia	115,122	234	-	-	-	-	-	115,356
Maryland	915	460	2,135	660	4,005	125	385	8,685
N. C.	79	23,960	-	-	-	-	-	24,039
Tennessee	227,083	44,201	-	-	-	-	-	271,284
Virginia	16,084	8,653	14,993	-	-	-	-	39,730
West Va.	119,734	37,044	-	-	-	-	-	156,778
Totals	479,017	114,552	17,128	660	4,005	125	385	615,872

#### BY OWNERSHIP

In 1941, of the total acreage worked (615,872) State and Private lands represented 429,801 acres or 69.8 per cent; national forests 102,687 acres or 16.7 per cent and national parks 83,384 acres or 13.5 per cent. Acreage worked on national lands thus represented 30.2 per cent of the whole. Of the bushes pulled (2,090,146) State and Private lands had 1,459,270 or 69.8 per cent; national forests had 429,635 or 20.6 per cent, and national parks had 201,241 bushes or 9.6 per cent. Bushes pulled on national lands thus represented 30.2 per cent of the whole. As to labor, State and Private lands represented 17,665 man days or 70.9 per cent, national forests 5,438 man days or 21.8 per cent, and national parks 1,820 man days or 7.3 per cent. The total man days were 24,923. A comparison of these percentages follows:

Owner	Per Cent of Totals		
	Acres	Bushes	Man days
State & Private	69.8	69.8	70.9
Federal	30.2	30.2	29.1
Total	100	100	100
National Forests	16.7	20.6	21.8
National Parks	13.5	9.6	7.3
Total	30.2	30.2	29.1

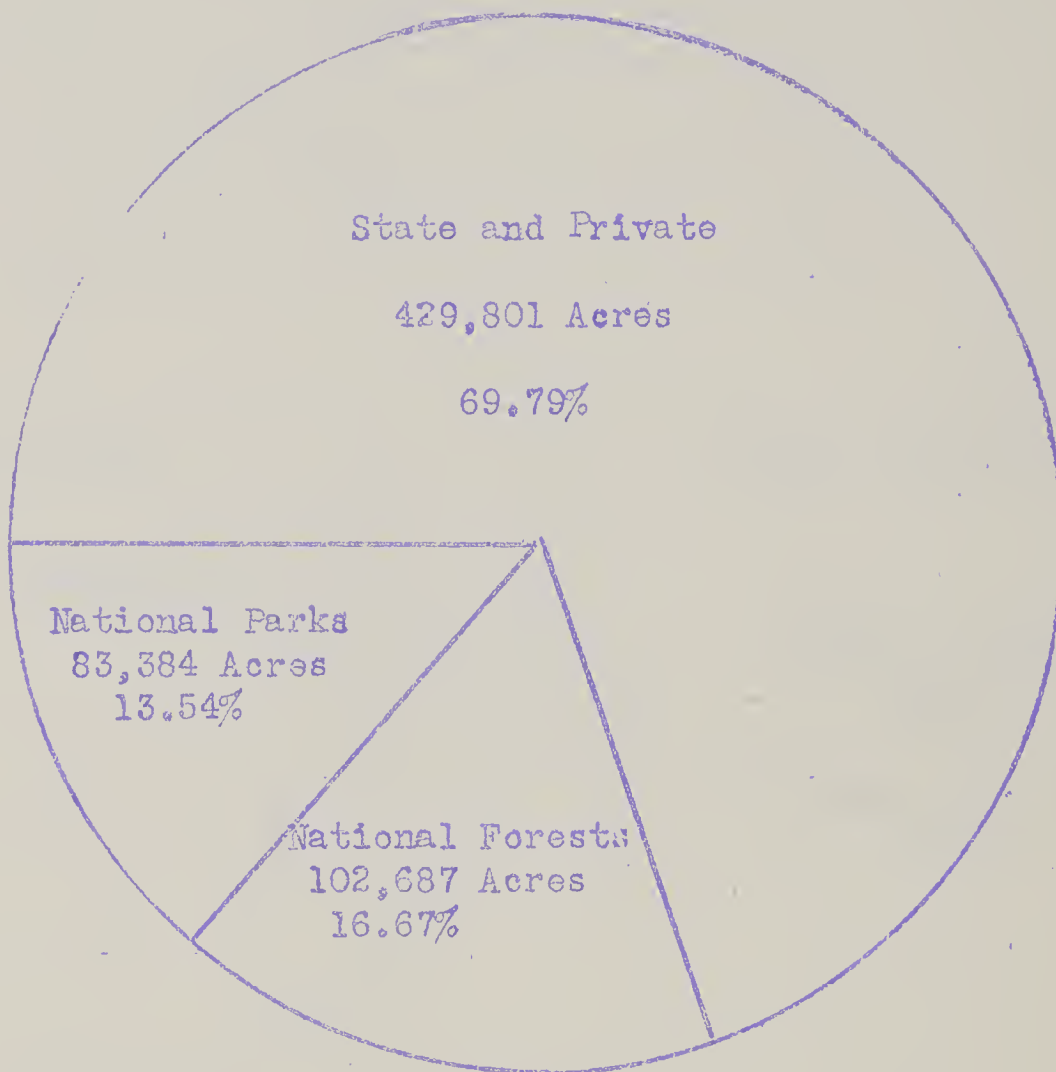
GRAPH SHOWING FOR ACREAGE DISTRIBUTION  
ACREAGE WORKED BY PROJECT (INITIAL AND REWORK)  
SOUTHERN APPALACHIAN STATES





GRAPH SHOWING HOW RICES ELIMINATION  
ACREAGE WORKED BY OWNERSHIP (INITIAL AND REWORK)  
SOUTHERN APPALACHIAN STATES

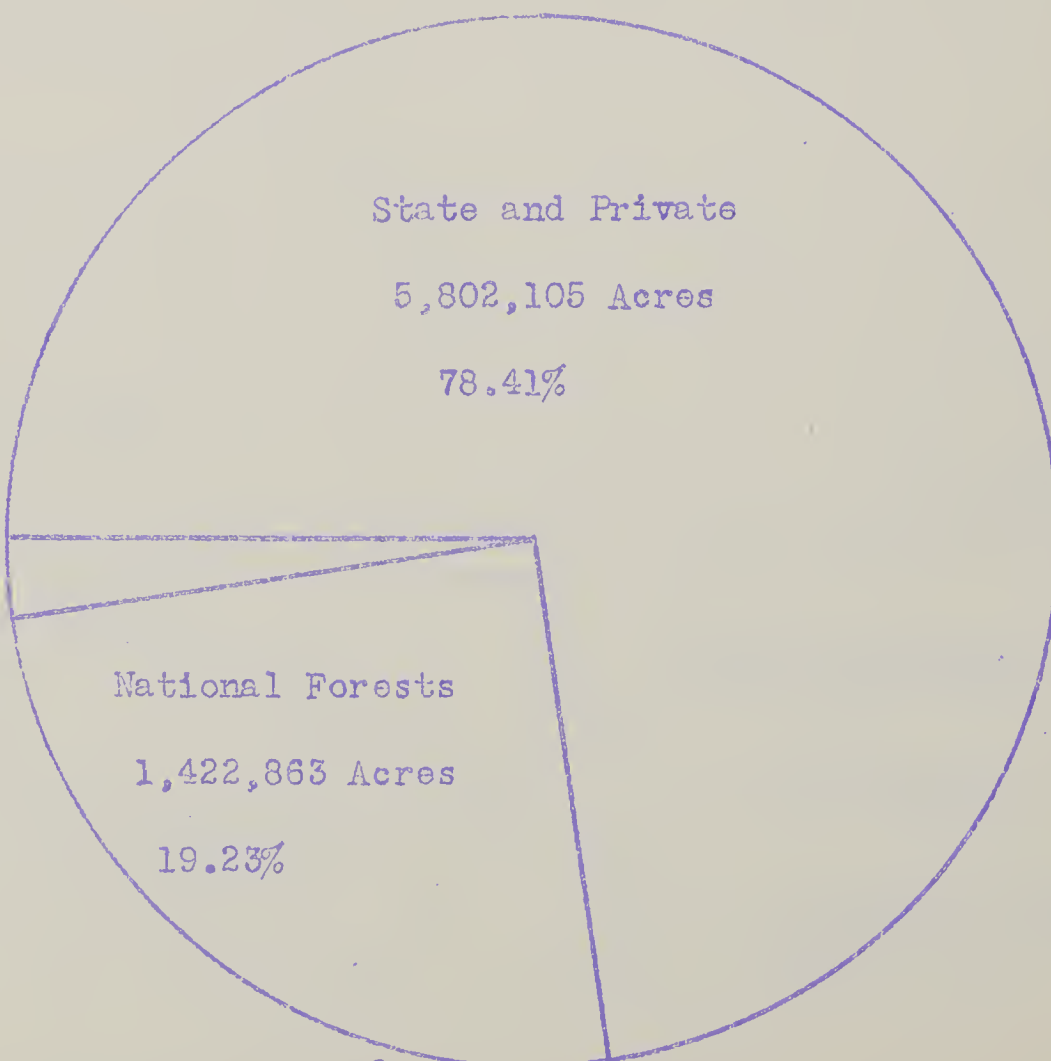
1941  
Total 615,872 Acres



1928-1941  
Total 7,399,585 Acres

National Parks  
174,517 Acres  
2.36%

Indian Reserves  
100 Acres



# RIBES ERADICATION COSTS FOR 1941\*

BY PROJECT

State	Reg.-Coop.	Fed WPA	State WPA	ECW	Totals
Georgia	500.00 (1)	3,508.30	-	-	4,008.30
Alabama	34.00	2,062.18	-	2,654.00	4,740.62
North Carolina	365.09	7,533.90	4,406.17	-	12,321.16
Tennessee	-	2,637.13	3,252.21	-	5,889.34
Virginia	294.00 (2)	4,230.15	2,200.58	-	11,724.73
West Virginia	512.18	21,943.70	5,540.67	571.50	29,677.01
Total	1,702.27	49,446.36	13,199.65	5,225.50	75,358.12

BY PROJECT

State	Reg.-Coop.	Fed WPA	State WPA	ECW	Totals
Georgia	3,534.94	500.36	-	-	4,035.30
Alabama	609.00	870.80	-	-	1,479.80
North Carolina	820.00	1,580.50	1,180.50	29.07	3,610.07
Tennessee	7,440.00	1,000.75	-	-	8,440.75
Virginia	2,000.00	4,210.00	-	-	6,210.00
West Virginia	20,000.00	22,000.00	-	-	42,000.00
Total	34,403.94	17,591.31	1,180.50	59.07	53,234.82

BY PROJECT

State	Reg.-Coop.	Fed WPA	State WPA	ECW	Totals
Georgia	1,544.52	-	-	-	1,544.52
Alabama	2,730.58	-	-	-	2,730.58
North Carolina	7,557.84	4,740.08	-	2.64	12,300.56
Tennessee	6,114.46	1,628.18	-	1,808.71	9,551.35
Virginia	3,271.30	4,508.70	-	5,414.21	13,194.21
West Virginia	29,509.55	568.46	-	-	30,078.01
Total	51,667.25	14,468.00	-	7,235.56	73,370.81

\* Based on annual statistical table 4, Sheet 2, Col. 2, Ribes Erad. Except Va. In "By Working" & "By Community" (1) See App. Facilitating Expense by State.

(2) In Virginia this includes \$198.30 expended by state for agent's salary (\$123.00) and a credit of \$75.30 for collected bushes pulled. In 1942 this amount should be deducted from Ribes eradication, erroneously placed there in 1941.

(3) This is correct total for Virginia, omitting \$196.20, which is usually charged to other than Ribes eradication.



1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100

Georgia	.029	.055	.079	.100	.085	.090	.025	.030	.053
Maryland	.077	.232	.544	.430	1.120	.800	.612	.380	.210
N. C.	.026	.063**				.030	.174	.070	.050
Tenn.	.068	.089	.075	.118	.115	.031	.015	.000	.093
Virginia	.284	.335	.165	.064	.110	.150	.149	.137	.192
West Va.	.231	.280	.184	.150	.157	.163	.210	.132	.174

#### SECOND WORKING

Georgia	-	-	2.260	.150	.100	-	-	2.860	.440
Maryland	.436	.241	.520	.690	1.730	1.250	.350	1.310	.410
N. C.	-	.031**				.110	.110	.480	.029
Tenn.	-	.356	.134	1.090	.970	.180	.200	.020	.090
Virginia	.212	1.500	.642	.300	.770	.540	.500	.256	.564
West Va.	.196	-	.275	.1071	.090	.150	.410	.374	.257

#### THIRD WORKING

Maryland	-	-	.220	-	3.000	-	1.000	.350	.480
Virginia	-	-	-	-	4.650	-	-	-	4.650
West Va.	-	-	-	.001	.430	-	.000	.424	.394

#### FOURTH WORKING

Maryland	-	-	-	-	.110	.350	-	.910	.320
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#### FIFTH WORKING

Maryland	-	-	-	-	-	.450	.550	.290	.350
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#### SIXTH WORKING

Maryland	-	-	-	-	-	-	.100	.300	.120
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#### SEVENTH WORKING

Maryland	-	-	-	-	-	-	-	.300	.300
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#### ALL WORKINGS

Georgia	-	.088	.083	.170	.107	.059	.023	.360	.0615
Maryland	-	.235	.380	.430	.870	.710	.727	.550	.2640
N. C.	-	.039	.053	.200	.039	.130	.174	.510	.0398***
Tenn.	-	.112	.110	.114	.117	.110	.037	.030	.0929
Virginia	-	.301	.202	.132	.110	.240	.240	.363	.2338
West Va.	-	.230	.198	.143	.113	.161	.250	.189	.1843

\* Includes Labor, Transportation, Tools, Binding, etc.

\*\* Figure represents average for entire four years 1935 - 1938 inclusive.

\*\*\* In North Carolina the average cost per acre for all years is given as .0398. This is based upon throwing out over a million acres of initial work without throwing out corresponding cost, which was difficult to ascertain. Actual cost of second working in North Carolina lies between 11¢ and 43¢ per acre.

A COMPARISON OF PRODUCTION IN RIBES ERADICATION

IN THE SOUTHERNAPALACHIAN STATES IN 1941 AND PRECEDING YEARS

State	Acres Per		No. Bushes Per Man Hour	PRODUCTION RATING (1)		
	Man Hour	1941		1940 (2)	1939 (3)	1918-1941
Georgia	11.024	15.95	1.447	51.72	92.02	120.78
Maryland	4.201	2.23	5.716	5.62	5.27	27.73
North Carolina	1.620	5.64	0.103	14.04	11.43	45.76
Tennessee	11.820	23.85	2.441	113.85	14.56	54.10
Virginia	1.196	16.29	13.625	17.55	9.79	12.56
West Virginia	2.132	31.54	14.796	33.69	52.57	32.55

(1) Production rating is the product of Acres per man hour by bushes per man hour.

(2) From Page B-113 of 1940 annual report.

(3) From Page 50.1 of 1939 annual report.

ERADICATION DATA FOR 1941										ERADICATION DATA FOR 1918-1941			
State	Acres Worked	Ribes Destroyed	No. 8-hr Man Days	No. Man Hours	Acres :Worked	Ribes Destroyed	No. 8-hr. Man Days	No. Man Hours	Acres Per Man Hour	Ribes Per Man Hr.	Production Rating		
Georgia	115,358	15,140	1,318	10,464	953,018	6,539,936	66,134	209,072	4.558	26,498	120.73		
Md.	8,688	57,407	1,231	15,448	233,786	3,702,423	22,080	176,640	1.323	20,960	27.73		
N. C.	24,039	352,978	4,847	38,776	3,293,821	2,422,893	52,204	417,632	7.887	5,802	45.76		
Tenn.	271,284	56,029	2,859	22,952	1,130,270	5,845,527	43,679	549,432	3.234	16,728	54.10		
Va.	39,730	520,711	4,778	38,224	799,116	7,628,626	87,100	696,800	1.147	10,948	12.56		
W. Va.	156,778	1,087,819	9,190	73,520	871,407	5,864,659	49,523	396,184	2.199	14,802	32.55		

It is interesting to note that the production rating in all states has fallen in 1941 as compared to 1940; and in four states as compared to 1939. Higher ratings are secured where the state gets a large number of ribes and a large acreage. Georgia was working in an area almost free of wild ribes, but utilized its time very well, getting a large acreage thru the survey of 5 per cent of the area. Maryland had a low rating because of working only ribes-bearing sites where population of ribes was low. North Carolina's rating in 1941, because of lower acreage worked and fewer bushes pulled, is low as compared to Virginia's, although hours of work in the two states are comparable.

We cannot alter the number of ribes per acre, having to take what we find, and hence cannot change measurably the number of ribes pulled per hour; but we can change the acreage worked per hour, and it is our aim to increase production by stepping up acreage worked where ribes are thinly scattered, either by working faster or by using wider spacing, or both.





# SUMMARY OF RIBES ERADICATION IN 1941

1995

• **Chlorophyll** is a green pigment that captures light energy.

(1) See breakdown of revenue on following page



# SUMMARY OF RIBS REPRODUCTION IN 1941

(Continued)

By Working, Project, and Ownership

(1) See preceding page

Table 1

Classification	Average : Collected	NO RIBS DESTROYED : Wild	NO RIBS DESTROYED : Cult.	Total : Man-Days	Total : Acres per	PER ACRE : Cost	PER ACRE : Man-Days	PER ACRE : Cost
REPRODUCTION OF RIBS								
: Second	460	?	?	9,233	197	603.52	2.34	20.1
: Third	2,155	?	?	10,401	494	1,593.15	4.32	4.9
: Fourth	660	?	?	12,150	292	593.17	2.26	20.9
: Fifth	4,043	?	?	2,480	509	1,100.90	7.87	.8
: Sixth	125	?	?	61	19	58.07	5.78	.4
: Seventh	385	?	?	432	22	125.88	5.24	.29
: Total	7,700	56,033	170	35,331	2,575	12,923.05	4.55	1.7

BY OWNERSHIP

: Initial	90	6,000	1,518	7,518	241	308.26	.24	93.20
: Growth	24,250	720,178	2,000	722,178	4,000	11,799.00	5.27	11.42
: Total	24,340	726,178	3,518	729,696	4,241	12,107.26	5.51	11.62
BY OWNERSHIP								
: Revolver (2)	75	-	-	-	5	30.00	27.00	.08
: Ser. 800	2,500	100,770	2,000	102,770	2,000	7,000.00	3.50	1.00
: State (1)	16,013	350,000	3,000	353,000	1,000	3,000.00	3.00	1.10
: Total	24,288	350,770	5,000	355,770	4,005	10,330.00	3.98	11.18

BY OWNERSHIP

: Pisgah N. P.	3,532	?	?	165,077	1,792	4,759.39	1.97	47.99
: Blue Ridge Pk.	270	?	?	2	1	2.00	190.00	.02
: State & Priv.	20,537	?	?	185,598	3,051	7,527.24	3.09	9.16
: Total	24,339	246,221	4,767	350,677	4,844	12,288.63	4.30	15.00

(1) Cost per acre based on the small average (79) reported initially worked. Noted in omnibus tables

(2) Includes State and Federal Regular Cooperative. Mr. Tague (on 4-2-42) reported at least 570 acres worked, and there are other Forest Service plantations worked whose acreage was reported as worked of initial work was high because it included cliff work. At 550 acres cost would be reduced to 11.20 acre.

(3) Includes garage costs in Asheville and miscellaneous expenses such as salt and borax which was not, but should have been, prorated to other projects.



# SUMMARY OF RIBES ERADICATION IN 1941

(Continued)

By Working, Project, and Ownership

## TENNESSEE

Table 1

Classification	Acreage : Worked : Wild : Cult.	No. 8-hr. : Total : Man-Days :	Total Acres per Man Day :	PER ACRE Bu. : Men-Days : Cost :	Cost per Man Day :						
BY WORKING											
Initial	227,062	35,513	20,514	58,029	2,517	27,346.61	20.21	.25	.011	\$ .032	\$2,86
Rework	54,901	-	-	-	342	1,002.73	129.24	-	.007	.023	5.28
Total	271,284	35,513	20,514	58,029	2,859	28,349.34	94.52	.21	.010	1.030	11.28
BY PROJECT											
Fed. WPA	67,496	35,513	17,028	68,561	1,001	12,997.16	67.46	.78	.512	1.044	11.29
State WPA	73,788	-	3,478	3,478	1,553	5,263.81	109.68	.02	.009	.026	1.28
Total	271,284	35,513	20,514	58,029	2,859	28,349.34	94.52	.21	.010	1.030	11.28
BY OWNERSHIP											
Charities N.F.	50,126	7	7	21,390	562	11,686.16	53.98	.71	.012	1.034	11.21
Gr. and Ut. N.F.	77,368	7	7	241	140	1,806.71	167.99	.021	.002	.010	8.28
Private	153,890	7	7	21,539	1,841	2,114.46	20.22	.77	.017	.031	2.79
Total	171,201	35,513	20,514	58,029	2,859	28,349.34	94.52	.21	.010	1.030	11.28

## VIRGINIA

BY WORKING											
Initial	15,044	127,246	229	124,446	1,880	46,007.84	12.08	9.7	.017	1.187	11.28
Rework (1)	25,646	534,185	3,992	607,166	2,848	8,204.12	6.03	10.6	.15	.363	2.78
Total	39,730	661,431	3,220	630,993	4,728	54,211.96	17.2	17.2	.150	1.550	14.06
BY PROJECT											
Reg. Coop.	24	629	627	627	60	9,010	4.0	12.0	.230	1.091	12.28
Fed. WPA	27,863	185,301	6,283	129,224	3,736	3,796.15	7.43	15.4	.150	.354	2.78
State WPA	11,203	81,662	347	81,960	382	2,400.32	12.04	7.7	.060	.186	2.11
Total	39,730	617,471	3,200	630,993	4,728	11,608.47	17.2	17.2	.150	1.532	14.06
BY OWNERSHIP											
Geo. Wash. N.F.	18,702	221,821	1,607	223,328	3,098	4,505.70	8.11	11.9	.110	1.250	20.28
Shen. N.F.	2,946	107,106	711	201,117	1,359	3,414.21	8.37	35.9	.230	.374	5.78
State & Fed.	15,044	385,234	1,082	386,556	1,321	8,277.68	11.42	8.4	.080	.311	2.28
Total	39,730	617,471	3,300	630,993	4,728	11,608.47	17.2	17.2	.150	1.532	14.06

(1) See breakdown of rework on following page.  
(2) Includes 110,000 acres previously reported in Table 1 as 810,000 acres.



SUMMARY OF RIBES ERADICATION IN 1941  
(Continued)  
By Working, Project, and Ownership

(1) See preceding page  
Table 1

VIRGINIA (Continued)

Classification:	Acreage : Worked	NO RIBES DESTROYED :Wild : Cult. :	Total : Man-Days :	No. 8-hr. : Man-Days :	Total : Acre per : Man-Day :	No. Bu. : Man-Days :	PER ACRE Cost : Man Day				
BREAKDOWN OF REWORK											
: Second	8,653	60,587	888	61,440	888	\$2,218.98	9.74	7.1	.102	\$ .256	\$2.50
: Subsequent	14,993	333,538	2,218	335,756	2,660	5,365.91	5.64	22.4	.177	.424	2.89
: Total	23,646	394,125	3,071	397,196	3,548	\$8,584.89	6.66	16.8	.150	\$ .363	\$3.42

WEST VIRGINIA

BY WORKING												
Initial	119,734	679,149	2,657	681,806	4,971	\$15,815.34	24.09	5.7	.042	\$ .132	\$5.19	
Rework	37,044	405,907	126	406,013	4,219	13,957.67	7.35	11.0	.114	.371	3.89	
Total	156,778	1,085,056	2,783	1,087,819	9,190	\$29,673.01	17.06	6.9	.058	\$ .159	\$8.82	
BY PROJECT												
Reg. Coop.	8,987	14,252	243	14,495	132	\$ 512.14	68.08	1.0	.018	\$ .057	\$3.00	
Fed. WPA	120,792	385,607	1,025	386,620	6,892	21,948.70	18.04	7.4	.055	.181	3.49	
State WPA	24,494	166,200	286	166,486	1,385	6,640.37	12.54	7.4	.057	.271	3.83	
CCC	2,525	18,797	309	19,106	381	571.50	6.63	7.6	.150	.223	1.80	
Total	156,778	1,085,056	2,783	1,087,819	9,190	\$29,673.01	17.06	6.9	.058	\$ .159	\$8.82	
BY OWNERSHIP												
Geo. Wash. N.F.	1,478	?	?	12,156	88	\$ 271.26	16.80	8.2	.059	\$ .183	\$3.88	
Monongahela N.F.	132	?	?	1,094	28	92.20	4.71	8.5	.212	.698	3.83	
Private & St.	155,168	?	?	1,074,569	9,074	29,309.55	17.10	6.9	.058	.189	3.89	
Total	156,778	1,085,056	2,783	1,087,819	9,190	\$29,673.01	17.06	6.9	.058	\$ .189	\$8.82	

## NURSERY SANITATION

Detailed statistics on the number of nurseries inspected in each state may be found in Table 3, Sheet 1, while cumulative data may be found in Table 3A, Sheet 1.

No nursery sanitation was conducted in Georgia or Tennessee.

In Maryland only two nurseries were inspected; namely, the State Forestry Nursery at College Park and the Soil Conservation Service Nursery at Beltsville. Three cultivated ribes near pines were destroyed at these two nursery sites.

In North Carolina only one nursery was inspected by our force, at Marmon's Anthony Lake Nursery in Avery County. 63 wild ribes were destroyed here. The work required 31 man days and cost \$76.28. (1162 ribes were pulled here in 1939).

In Virginia eight nurseries inspected included the State Forest Nursery in Albemarle County; the Waynesboro, the Fairfax Hall and the H. B. Jordan nurseries in Augusta County; the Westcott and the Forman nurseries in Fairfax County; the Dalwood Nursery in Hanover County, and the Wood-Howell Nursery in Washington County. Escaped cultivated gooseberries (Ribes reclinata) were found near Forman's Nursery in Fairfax County. Fifteen bushes ranging from six inches to six feet in height were destroyed in the heavy bramble thicket in front of the home of Mrs. Harman. No rust on ribes or pine was found at any of the nurseries inspected. In the eight nurseries there were 363,232 white pines. This work was performed with three man days supervision and  $4\frac{1}{2}$  WPA man days of labor at a total cost of \$35.28.

In West Virginia the U. S. Forest Service Nursery at Parsons was inspected and a full report is given on the following page.





## INTRODUCTION

The United States Forest Service in cooperation with the U. S. Bureau of Entomology and Plant Quarantine has conducted a ribes suppression project at the Forest Service Nursery at Parsons, West Virginia since 1939. The purpose of this project is to protect the white pine stock growing in the nursery from infection by blister rust. Each year since 1929 the nursery grounds and an adjacent protective zone 1500 feet wide has been covered by a crew of men or scouts whose objective was to search for and destroy the wild or cultivated gooseberry or currant bushes growing within the prescribed area.

In addition to the 1500 foot zone, crews have pulled bushes up to about 1/2 mile distant from the nursery to the south and east. To the north, bushes were once heavily concentrated just over the top of Turkey Knob. To the east was a high bluff covered with gooseberries 1/2 to 1/3 miles from which the rust might easily have spread to the nursery lying in plain view down the valley. Wind currents are strong at times, coming up or down the valley.

I made an inspection for the blister rust on pines this spring but was not able to find any. It is quite possible that had an inspection of pines near the nursery been made later in the year some infection might have been found.

## DISCUSSION OF 1941 WORK

In 1941 ribes eradication work in the nursery was begun on April 16. By this date leafing of the ribes bushes had progressed to a point where they were easily seen. On April 30 the work was discontinued until May 7 when it was resumed and continued without interruption of more than a day to May 25. On the latter date the 638 acres within the control boundary had been covered. Since 1939 suppression work at the nursery has been conducted by one trained scout, Mr. W. G. Pennington, whose long association with sanitation work at the nursery has familiarized him with the details of the work and the area to be covered. In working the cliff of the sandy bank of the Blackwater River opposite the nursery Mr. Pennington was assisted by another man.

A single scout was used in preference to a crew because suppression of ribes in this nursery has reached a point where it is one of maintenance. The number of bushes pulled each year for the last few years, including 1941, has averaged less than one per acre. With the bushes so few, emphasis is placed on quality work rather than quantity. A single trained man, it is believed, will remove the bushes in such a way as to reduce sprouting from roots and crowns to a minimum.

At the time the suppression work was done there were 168,000 white pine transplants in the nursery. 150,000 of these were one year and 18,000 two years. In addition approximately 70,000 white pine trees were still in seed beds. The total number of white pines was 238,000.

## CONTROL DATA

In the control zone of six hundred thirty three acres a total of 501 wild





Ribes Destroyed in Past 10 Years, 1933 to 1941 inclusive

Block	1933	1940	1941	1942	1943	1944	1945
1			56	50	642	50-8	50-8
2	96	108	258	38		8	6
3	282	51	84	323			
4 & 5	1	3		322	2		
7B	6			321			4
7CE	40	54	14	35			1
7DFG	8		32	58A	43	87	66
7H, 13	3	11		58BAC		11	7
10	4	7	8	58A	2	30	
12	30-8	12		58BAC			6
13		11		58F			2
15	2			58H			8
18			4	40	8		
Ext. 1	618			41		81	15
NA1 Eastward extension of control zone north of river				41A		1	7
NA2 Eastward extension of control zone south of river				41B	35	13	17
Ext. 1, North slope of Turkey Knob				41C		13	12
Ext. 2, Ridge between Roaring River and Hambleton - Parsons Road				Ext. 2	5118		
				Total	5287	407	503

Both Ext. 1 and 2 are 1500 feet from Nursery

Note 3c and 6 c indicate cultivated currants - all others are wild gooseberries

Since 1928, 30,456 ribes have been destroyed in the vicinity of Parsons Nursery of which two blocks outside of the 1500 foot control zone, Ext. 1 counted for 1580 bushes and Ext. 2 counted for 8370 bushes, making a total of 9950 leaving a total of 20,526 pulled within the 1500 foot control zone. Of this total (20,526) 503 were pulled in 1941 or 2.45%.

Omitting blocks Ext. 1 and 2, which are over 750 feet from nursery, ribes were found in 16 blocks in 1933, in 17 blocks in 1940 and in 23 blocks in 1941. Area 2 as well as Ext. 2 are outside of the 1500 foot control zone, both being on the north side of Turkey Knob. If bushes pulled in 1941 in Area 2- 236 in all were subtracted it would leave but 287 in the restricted 1500 foot control area. This is an average of about 1 bush for every two acres.

The work carried on for the past 14 years has demonstrated that the ribes population can be kept down, even though sprouting occurs and seedlings appear. Seedlings cannot be located the first one or two years they are so small but they are located for the most part in 3 or 4 years before much or any seed has been produced.

The uprooting of between 400 and 500 ribes every year shows the desirability of annual eradication around the nursery. For only in this way has the blister rust been kept out of the white pine seedbeds and transplant beds.

No rust has been found in the vicinity of Parsons Nursery since 1935.

J. M. Ashcroft





## CANKER ELIMINATION

Canker elimination was carried on only in Virginia in 1941, the work being performed by WPA men working under our agents. State Leader Luce describes the work as follows:

The pruning is performed by small crews of up to six men and lines are maintained with string as in ribes eradication. Each tree is examined by two men working opposite each other, their positions being such that the sun shines between them and not directly into the eyes of either one. One's head must be pushed well inside the branches for observation, as an examination from outside the crown often fails to reveal all cankers. When cankers are found on stems several factors influence the selection of treatment to be given. If the canker is midway or lower on the stem the tree is cut down at its base. If the tree grows close to another tree and its removal is in line with good thinning practice the tree is cut down. If the tree is well spaced from its neighbors and it appears that pruning will save it, the stem is cut well back from the canker (at least a foot) to the next whorl of branches in clean wood. Then all but one or two of the branches are removed so as to concentrate growth in these remaining branches and to induce the quick formation of a leader. Cankered branches are cut back at least a foot from the canker or flush with the main stem, an undercut being made to prevent stripping the main stem bark.

All prunings are collected and buried in shallow trenches or burned. Burying is resorted to only when the work lies far back in the mountains and the woods are very dry. Usually some natural hollow, such as the root hole of a windfallen tree, is used. Burning should be resorted to whenever practicable.

The foreman tallies the trees examined, records the number of cankers by branch and stem groupings, and spot checks behind the crew for efficiency. The equipment used is string, single-hand 8" pruning snips, two-hand 30" pruning snips, 18" curved pruning saws, 10-foot pole pruner, pole axe, shovel and mattock.

This year all canker elimination was confined to the Federal lands within the Dry River and Deerfield Ranger Districts of the George Washington National Forest in the counties of Augusta, Highland and Rockingham. No CCC work was done in the Shenandoah National Park. All work was by WPA Federal and State projects.

A total of four areas was worked. All of the 104 acres covered were "first working." Out of the 27,614 trees examined, 5,073 or 18.4% were infected. 3,200 trees or 11.6% were treated and 1,873 or 6.8% were cut down. A total of 47,993 cankers was removed; 47,741 from branches and 252 from stems. Each infected tree treated had an average of 15 cankers. The men examined the infected trees, removed the cankers or cut the trees down at the rate of 19.2 per hour, or 153 trees per day. 180 man days were expended at a cost of \$481.33, or an average per acre of \$1.59. Only the time spent cutting out the cankers was charged to canker elimination. The time spent looking for cankers was charged to Miscellaneous Activities. The following table gives details of the work for 1941. Details for previous years and cumulative data for Virginia are to be found in Mr. Luce's annual report for Virginia. Cumulative data for both Maryland and Virginia are found in this report on Page A-9.

Table on following page



# CAMPBELL REPORT

## George Washington National Forest Virginia 1941

Grid	Area	Name of Area	Working	County	Acre	Examined	Treated	Cut Down	Branch	Stem	Days	Cost
Number	:	:	:	:	:	:	:	:	:	:	:	:
FEDERAL PROJECT												
36-DB		Jerry's Run	1st	Augusta	60	4,796	472	408	4,846	1	34	\$ 21.50
38-CC		Shenandoah Mt.	1st	Augusta	95	11,154	1,903	1,032	30,896	136	81	215.70
		Deerfield Dist.	1st	Augusta	155	15,950	2,377	1,540	35,742	137	115	\$307.22
56-BB		Jerry's Run	1st	Highland	40	7,219	145	99	740	5	27	\$ 72.35
38-CC		Shenandoah Mt.	1st	Highland	70	8,146	555	399	11,105	27	34	91.90
		Deerfield Dist.	1st	Highland	110	10,364	701	438	11,845	32	61	\$164.25
		TOTAL DEERFIELD DISTRICT			265	26,314	3,078	1,838	47,637	169	176	\$271.91
2-F		Moore's Hollow	1st	Rockingham	30	899	100	25	102	73	3	\$ 7.50
		TOTAL DRY RIVER DISTRICT			30	898	100	25	102	73	3	\$ 7.50
		TOTAL FEDERAL PROJECT			295	27,212	3,178	1,863	47,689	242	179	\$279.15
STATE PROJECT												
10-F		Snake Hollow	1st	Rockingham	9	402	22	10	52	10	1	\$ 2.00
		(Dry River District)										
		TOTAL DEERFIELD DISTRICT			265	26,314	3,078	1,838	47,587	169	176	\$271.91
		TOTAL DRY RIVER DISTRICT			39	1,300	122	35	154	83	4	\$ 9.82
		GRAND TOTAL ALL DISTRICTS			304	27,614	3,200	1,873	47,741	252	180	\$281.83

Preeradication surveys were carried on during 1941 in Georgia, North Carolina, Tennessee, Virginia and West Virginia. Resurveys were also made in Maryland and Virginia on certain white pine areas which previously had not been mapped or where existing maps were inaccurate. All survey work in the region has now been put on a mile square basis which we call the "Grid System." In those states where the survey was nearly completed before the advent of the grid system the old area maps have been overlaid on a base grid map. This has been done to tie all work into the permanent control record system.

Following are two tables showing a summary and analysis of preeradication survey work accomplished in the region during 1941.

Preeradication Survey - 1941 (Acreage)

State	Control Acreage	White Pine Surveyed	White Pine Over 50 Stems Per Acre	White Pine Under 50 Stems Per A.	W. P. Worth Protecting	Man Days
Georgia	115,356	94,297	53,188	41,109	94,297	1,878
Maryland (3)	-	-	-	-	-	287
N. C.	114,422	51,858	41,151	10,707	51,787	3,742
Tennessee	191,320	112,941	60,048	52,893	112,029	6,191
Virginia	68,283 (1)	36,252	25,246	11,006	35,654	1,619 (2)
West Va.	94,330	29,596	19,183	10,463	29,596	1,611
Totals	583,711	324,944	198,766	126,178	323,363	15,328

(1) Includes 47,798 acres resurveyed.

(2) Includes 1133 man-days on resurvey

(3) All resurvey. No acreage reported since this work was confined to reestablishing old control zone boundary lines and making pine and ribes counts to determine present priority status.

Analysis of Preeradication Survey - 1941

State	Control Acres Covered Per Man-day	Acres W.P. Mapped Per Man-Day	Percent of W. P. in Control	Total Cost Of Preeradication	Cost Per Acre Covered	Cost Per Acre Mapped	Cost Per Man-Day
Georgia	61.4	50.2	82	\$6,523.45	\$ .06	\$ .07	\$ 3.47
Maryland	-	-	-	847.98	-	-	2.95
N. C.	30.6	13.9	45	9,724.19	.08	.19	2.60
Tennessee	30.9	18.2	59	17,353.44	.09	.15	2.80
Virginia	42.2	22.4	53	2,827.58	.04	.07	1.75
West Va.	58.6	18.4	31	4,873.04	.05	.16	3.02
Totals	38.8	21.6	55	\$42,149.68	\$ .07	.13	\$ 2.75

In the above analysis Georgia shows the highest rate of coverage with 61.4 acres per man day for control acreage and 50.2 acres for white pine acreage mapped. North Carolina shows the lowest rate of coverage with 30.6 acres for control and 13.9 acres for white pine mapped. The main reason for this difference in coverage is the use of more men in North Carolina than was actually necessary to carry on survey work. This was true also for Tennessee and Virginia as well as for North Carolina. However, we cannot unfairly criticize a state for increasing the labor load on any one activity when using WPA labor, since it must be remembered that we are often forced to confine our work to a limited area, at the same time carrying a much larger number of acres.



properly trained and supervised by the State. The quality of the work done is good. The fact that any of our trained men were employed in good deal of time had to be spent in training new men, a large percentage of whom could not fulfill the demands of our work. In Georgia Mr. [Name] was fortunate in holding on to part of his trained key men during the year. Also in Georgia it will be noted that the white pine acreage covered is 82% of the total control acreage with other states ranging between 61 and 59%.

In Georgia it happened that practically all of the survey work done in 1941 was carried on in some of the best white-pine-growing sections of the State with very few breaks in the pine stands. In the other states the pine areas surveyed were more broken up with proportionately larger protective zones to cover. The cost per acre covered runs fairly close for all states, with Tennessee having the highest at 9¢ per acre, and Virginia the lowest at 4¢ per acre. The average cost for the region was 7¢ per acre for control and 13¢ per acre for white pine mapped. The higher cost per man day in Georgia is for the most part due to transportation costs. The low rate per man day in Virginia, as well as in some of the other states, is due to the fact that no operating costs were charged to this activity.

ERADICATION SURVEY - 1918-1941						
State	Control Acreage	Acres W. P. Worth Protecting	Number Man-Days	Acres Covered Per Man-day	Acres W. P. Mapped Per Man-day	Cost Per Acre Covered
Delaware	4,267	131	449	9.5	.43	.40
Dist. of Columbia	1,875	35	(1)	-	-	-
Georgia	940,354 (3)	551,955	11,935	78.8	46.2	.04
Kentucky	80,565	62,147	(2)	-	-	-
Maryland	203,191 (4)	73,347	3,054	66.9	35.9	.04
N. C.	1,817,188	692,762	31,531	57.5	21.9	.04
S. C.	29,635	15,137	4(2)	-	-	-
Tenn.	1,041,583	635,000	26,145	37.0	22.6	.07
Virginia	752,189	263,550	15,552	48.4	17.3	.06
West Va.	823,353	295,000	18,760	43.9	15.7	.09
Totals	5,694,200	2,594,617	108,400	51.4	23.1	.05

- (1) Acreage estimated by agents; charged to supervision.  
 (2) Man days charged to eradication except for four man days in South Carolina.  
 (3) Re-estimate.  
 (4) A total of 4933 acres eliminated in Maryland because of change of priority status resulting from re-survey in 1941.

It is impossible at this time to give us definite a breakdown for cumulative survey work done from 1918 through 1941 as best for the year 1941. Throughout 1941 all survey work was based on an actual survey while the cumulative table is based on both actual and estimated figures. When the permanent control records are completed for the region we will be able to segregate our data more accurately by actual and estimated control acreage. However, we do not feel that there will be any material change in the present estimated figures since many necessary field adjustments have already been made.

To illustrate a condition which now exists in the matter of estimated and surveyed acreage figures, we refer to the present status in Georgia. In this State a total of 940,354 acres have been reported as covered and initially worked. Actually only 628,015 acres have been mapped by the grid system. The remaining 312,339 acres was merely estimated with a few areas spotted in on old U.S.G.S. quadrangle sheets. Many of these estimates were made during the early years of cultivated ribes eradication. By examination of these large estimates in counties recently covered by the grid survey, it

was found that the ratio of white pine acreage to control zone did not even approach actual survey conditions. The estimates were based on a one to three ratio, making the protective zone acreage twice that of the pine acreage. The actual survey in Georgia gives a protective zone about one third as great as the white pine acreage. This is true because of large tracts of unbroken white pine stands in the better white-pine-growing sections of the State.

#### SURVEY WORK REMAINING TO BE DONE

GEORGIA - Approximately 70,000 acres remain which should have a grid survey. These lie in Murray, Gilmer, Union, Town Lumpkin and White counties. Many large estimated tracts of white pine should be re-estimated through rapid preliminary surveys. All original ribes-bearing areas which have been worked one or more times should be surveyed or post checked to determine their present status.

MARYLAND - Detailed surveys should probably be made in Allegany County; otherwise no more survey work is recommended in this State.

KENTUCKY - Detailed maps should be made of ribes-bearing areas initially worked in this State. Rapid preliminary surveys are also recommended throughout the white-pine-growing counties. More extensive checks should also be made for ribes-bearing areas, especially near the Tennessee line in the Cumberland Mountains where the presence of wild ribes has been reported.

NORTH CAROLINA - A certain amount of survey work is recommended in this State, especially in the southwestern counties where ribes- and pine-bearing areas were only spot mapped in the past.

SOUTH CAROLINA - From the small amount of preliminary scouting made in this State and the large acreage of white pine surveyed near the State line in Rabun County, Georgia, it is felt that there is much more white pine in South Carolina than the original estimate shows. Some preliminary surveys should be made. This can probably be done when a re-check is made for cultivated ribes eradication.

TENNESSEE - All detail survey work is finished in this State except in Monroe and Polk counties, most of the remaining work being in the Cherokee National Forest.

VIRGINIA - Extensive surveys should be made in this State, particularly throughout the southwestern section where no uniform detailed mapping has ever been done. From general field observations it appears that there may be a considerable increase in the white pine acreage over the present estimate, with an increase of ribes-bearing acreage to be worked. Many of the smaller white pine lots can be remapped in conjunction with post checking.

WEST VIRGINIA - Very little survey work remains to be done in West Virginia. Surveys should be completed, however, in Morgan and Hampshire counties. Remapping needed in other counties can be carried on when post checked.





## COOPERATION

Figures on State and private cooperation are given on Pages C-1 and C-2 of this report, for both cash and services. A total of \$10,114.12 cash was expended from State and private cooperative funds in the calendar year 1941, an increase of 23 per cent over the cash expended by those agencies in 1940. Data on cooperation of the WPA are to be found on Pages C-4 and C-7. A total of \$176,483.91 was expended in the calendar year 1941 on WPA projects. NYA expenditures amounted to \$1,503.22. The ECW expended a total of \$3,930 in Maryland, Virginia and West Virginia. The U. S. Forest Service cooperated at the Parsons Nursery in West Virginia to the extent of \$130.40, and the Department of Interior (Park Service) to the extent of \$350 in the Shenandoah National Park in Virginia. Data of total expenditures from all sources are given on Page A-4 for each state.

GEORGIA - The State has continued to cooperate closely with our Division. In the calendar year 1941 the State expended \$639.31 on blister rust control. In addition State Leader Zimmer had the use of the colored motion picture on blister rust control prepared by the State Entomologist's office, as well as the motion picture projector. Acknowledgment is made of the excellent cooperation of State Entomologist Girardeau and his assistants. Fannin County made office space available to us in the County Court House at Blue Ridge for the entire calendar year. This was valued at \$180 for the year.

MARYLAND - Cash cooperation in Maryland did not materialize last year, although in the estimate of cooperation to be contributed for the fiscal year 1941, signed by the State Forester, there was an item of \$200, and for 1942 an item of \$850. On the other hand, the County of Allegany did cooperate by providing office space for our State Leader at Cumberland in the County Court House, valued at \$300 for the year. The Federal government, however, expended a total of \$10,902.35 from regular funds, WPA and ECW for blister rust control in Maryland during the calendar year 1941.

NORTH CAROLINA - The splendid cooperation of the State continued, the State Department of Agriculture making available \$5,000 cash each for the fiscal years 1941 and 1942. In the calendar year 1941 it expended from this allotment actually \$4,528.89. Haywood County provided an office in the Court House, together with typewriter and telephone, valued at \$380 for the year.

TENNESSEE - For each of the two fiscal years 1941 and 1942 the State Department of Forestry allotted \$2,000 in cash, and actually expended in the calendar year 1941 \$1,854.57. Office space was allowed us by the Post Office Department in its buildings at both Knoxville and Elizabethton. The TVA is cooperating with our Bureau not only in Tennessee, but in North Carolina, furnishing us with lists of white pine planters. A cooperative agreement was drawn up between the Bureau and the Authority covering all territory within the purview of the latter. This was not signed, however, until April 10, 1942.

VIRGINIA - For the fiscal year 1941 the State Department of Agriculture agreed to expend \$600 and for the fiscal year 1942, \$900. During the calendar year 1941 the actual expenditure from these allotments was \$805.87. Girl Scouts contributed labor in ribes eradication on the George Washington National Forest and adjacent private lands valued at \$95.80. Agent Cramer built a work shop and office at his home near Mount Solon and has donated the use of these to our work since May 15, 1941. The George Washington National Forest has continued its cooperation by making available to us under a special use permit a large garage (32x80 feet), a work shop (20x24 feet), and an oil house (12x20 feet) worth very conservatively \$600 per year. These buildings are within a fenced-in enclosure at Bridgewater, eight miles from Harrisonburg, where the Post Office Department allows our State Leader an office in its building there.



WEST VIRGINIA - The State Conservation Commission expended \$2,285.48 in the calendar year 1941 and secured through the Legislature a direct appropriation of \$10,000 for blister rust control for the biennium ending in 1943. This is the largest appropriation made at any one time by any of the southern states for our cooperative work. In addition the counties of Pocahontas and Grant made office space available to us in Marlinton and Petersburg, an estimated value of \$600 for the two locations.

Order Number	Order Date	Customer Name	Address	City	State	Zip	Phone
1	5-21-68	W. J. ...	...	...	...	...	...
2	5-27-68	...	...	...	...	...	...
3	5-28-68	...	...	...	...	...	...
4	5-28-68	...	...	...	...	...	...
5	5-28-68	...	...	...	...	...	...
6	5-28-68	...	...	...	...	...	...
7	5-28-68	...	...	...	...	...	...
8	5-28-68	...	...	...	...	...	...
9	5-28-68	...	...	...	...	...	...
10	5-28-68	...	...	...	...	...	...

8072387

Order Number	Order Date	Customer Name	Address	City	State	Zip	Phone
1	5-28-68	...	...	...	...	...	...
2	5-28-68	...	...	...	...	...	...
3	5-28-68	...	...	...	...	...	...
4	5-28-68	...	...	...	...	...	...
5	5-28-68	...	...	...	...	...	...
6	5-28-68	...	...	...	...	...	...
7	5-28-68	...	...	...	...	...	...
8	5-28-68	...	...	...	...	...	...
9	5-28-68	...	...	...	...	...	...
10	5-28-68	...	...	...	...	...	...



## STATEMENT OF ASSETS AND LIABILITIES

December 31, 1941

Order Number	Engine Number	License Number	Serial Number	Capacity tonnage	Kind and Make	Year Model	Date Purchased or Transferred
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1	T-1225413	A 6-889	8072326	1/2	Dodge pickup	1935	12/27/35
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2	59034-19	A1-954	11FC 021	326 Sedan	Chev.	1936	3/4/36
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Order Number	Speedometer Reading 12/31/41	Mileage in 1941	Number Gallons Gasoline Used	Total Cost for Calendar Year	Disposition
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1	43,687	7,600	61.9	\$217.17	
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2	74,955	13,660	94.5	\$355.92	
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Order Number	Engine Number	License Number	Serial Number	Revolution	Used (Yes/No)	Year Model	Date Received
1	S-1523655	A1-166	54021702	1/3	Over, 14000	1930	1/13/31
2	S-5712052	A11-617	89503577	1/3	" "	1933	12/2/31
3	T-191-22 350	A1-316	86-04092	1/3	Flyer	1939	1/13/31
4	T-15519	A1-532	82087	1/3	Under 14000	1939	1/13/31
5	S-746773	A1-517	8950357	1/3	" "	1935	1/13/31
6	T-1222733	A5-851	8072112	1/3	" 14000	1935	2/1/31
7	T-1221244	A11-618	8072160	1/3	" "	1935	2/21/31
8	T-1221158	A12-185	8072112	1/3	" "	1935	1/1/31
9	T-1221180	A11-613	8072120	1/3	" "	1935	2/21/31
10	T-1221716	A12-163	8072112	1/3	" "	1935	2/21/31
11	T-1221190	A13-181	8072112	1/3	" "	1935	1/1/31
12	T-1221556	A5-860	8072181	1/3	" "	1935	1/1/31
13	T-1225013	A11-610	8072109	1/3	" "	1935	2/21/31
14	T-1225392	A12-182	8072160	1/3	" "	1935	12/22/31
15	T-1225435	A1-812	8072166	1/3	" "	1935	2/12/31
16	T-1225816	A11-610	8072165	1/3	" "	1935	12/28/31
17	T-1225354	A11-611	8072192	1/3	" "	1935	12/20/31
18	T-1225371	A3-994	8072157	1/3	" "	1935	12/22/31
19	T-1225986	A11-612	8072113	1/3	" "	1935	2/21/31
20	T-1226213	A11-616	8072167	1/3	" "	1935	12/26/31
21	T-1226501	A11-617	8072130	1/3	" "	1935	2/2/31
22	T-3719311	A11-620	675	1/3	Over, 5000	1933	5/15/36
23	T-3761138	A3-996	7025	1/3	" "	1933	11/11/31



Order Number	Balance 12/31/41	Balance in 1942	Number of Units Sold	Net Sales for Year	Disposition
1	15,717	8,725	100	118.00	
2	16,811	1,502	100	160.00	
3	19,800	13,222	100	113.13	
4	37,533	11,500	100	310.00	
5	23,058	2,900	300	52.00	
6	30,133	0	30	3.00	Sold 7/1/41
7	33,140	10,200	100	25.00	
8	41,801	5,100	100	20.00	
9	61,640	19,300	100	119.00	Sold 1-10/41
10	15,256	2,100	100	117.00	
11	15,392	1,000	300	77.00	
12	18,591	5,337	132	38.61	Sold 9/22/41
13	13,493	11,263	1,101	132.00	
14	16,216	0,600	73	100.00	
15	17,936	3,700	72	37.12	
16	16,283	1,900	110	100.00	Sold 8/19/41
17	13,106	9,312	780	115.00	Sold 11/21/41
18	55,011	1,900	320	55.00	Sold 9/18/41
19	13,208	10,210	100	121.00	
20	19,097	11,100	1,000	181.00	
21	38,613	9,002	120	110.00	
22	61,686	1,100	160	28.12	Sold 9/22/41
23	Not used during 1941				Sold 2/7/41

Order Number	Engine Number	License Number	Serial Number	Engine Type	Year	Model	Sale Date
1	24B-2230	54-608	20110913	4 Cyl	1935	Model	11/13/30
2	K-6173561	56-637	351408	1 1/2 Cyl	1936	Model	11/13/30
3	K-6175122	51-371	38813-8813	"	1936	"	11/13/30
4	M-5745617	A5-858	280116803	"	1936	Model	2/13/31
5	PT-8121922	A1-324	8628075	"	1935	Model	1/13/31
6	PT-8122113	A1-325	8628117	"	1930	"	1/13/31
7	T-1225805	A5-854	8072377	"	"	"	1/6/36
8	T-1226169*	A5-861	8072332	"	1935	"	2/24/38
9	T-3685011	6-633	300005591	1 1/2	1933	Model	7/31/37
10	T-3719338	A5-857	8103	1 1/2	1933	"	7/13/38
11	T-740464	A1-517	828132	1 1/2	1939	Model	1/13/31

Order Number	Speedometer Reading 12/31/41	Mileage in 1941	Gasoline consumed	Total Cost for Calendar Year	Disposition
1	34,217	6,206	1,070	217.07	
2	38,754	9,648	775	186.70	
3	31,365	5,629	505	156.78	
4	58,439	7,087	501	215.98	
5	20,379	13,691	511	187.93	
6	17,942	13,571	1,060	190.27	
7	49,113	6,060	323	155.53	
8	15,969	3,489	318	67.17	
9	59,160	Not used during calendar year 1941			Sold 3/10/41
10	57,498	209	52	41.07	Will be sold
11	29,747	6,348	601	107.67	

\* T-1226169 heretofore reported erroneously as T-1226168.



Order Number	English Number	Arabic Number	Arabic Number	Arabic Number	Arabic Number	Year	Date of Release
1	A-3710354	A5-664	27144	/	Short, Steep	1935	5/21/37
2	A-3772435	A5-665	28145	"	"	1935	"
3	A-3818060	A5-666	28146	"	"	1935	"
4	A-5741342	A11-302	110141785	"	"	1936	2/10/35
5	A-5728086	A5-897	281410000	"	"	1936	2/15/38
6	A-5745638	A11-303	281410538	"	"	1936	2/17/38
7	FP-8121907	A5-700	2628281	"	Long, Steep	1939	1/13/41
8	FP-8122136	A5-701	2628282	"	"	1939	1/13/41
9	T-1222100	A11-304	1072100	"	"	1935	2/21/38
10	T-1222172	A11-305	1072101	"	"	1935	12/27/37
11	T-1222140	A11-306	1072102	"	"	1935	2/21/38
12	T-1222157	A11-307	1072103	"	"	1935	2/21/38
13	T-1222168	A5-853	1072104	"	"	1935	2/21/38
14	T-1225119	A11-291	1072105	"	"	1935	1/5/38
15	T-1225318	A5-890	1072106	"	"	1935	12/27/37
16	T-1226187	A11-203	1072107	"	"	1935	2/21/38
17	T-1226195	A11-351	1072108	"	"	1935	1/5/38
18	T-3719260	A5-657	61301	11	Short, Steep	1933	5/15/36
19	T-3733102	A5-658	61302	12	"	1933	7/2/36
20	T-3738260	A5-856	61303	13	"	1933	5/15/36
21	5995270	A5-430	8622101/3	14	Good, Steep - Gedani	1939	6/28/39

LIST OF THE FIVE HUNDRED MOST VALUABLE CARS  
Produced in 1911

Order Number	Speedometer Reading 12/31/11	Miles in 1911	Wagon Gallons Consumed	Total Cost for 1911 Year	Disposition
1	77,601	2,296	256	221.32	Sold 10/25/11
2	48,632	1,589	203	21.05	" " "
3	64,070	1,641	161	15.87	" " "
4	61,681	2,802	203	70.31	
5	75,667	1,683	204	51.91	
6	64,406	5,133	338	66.13	
7	27,860	10,215	1,110	129.57	
8	14,653	10,496	783	75.55	
9	41,622	11,560	912	123.11	
10	58,461	4,733	511	67.36	
11	64,162	7,066	1,002	111.29	
12	54,842	2,620	326	63.05	
13	38,232	2,990	257	28.63	
14	52,893	5,603	1,003	56.45	
15	49,240	5,021	1,117	50.93	
16	73,068	5,530	207	29.61	
17	56,121	9,573	704	66.14	
18	57,614	2,199	235	35.83	Sold 10/25/11
19	47,762	592	56	9.53	" " "
20	57,497	0	0	5.23	" " "
21	43,880	8,144	1,195	60.63	



Order Number	Engine Number	License Number	Serial Number	Capacity Tons	Brand	Model	Date Purchased or Transferred
1	M-5728144	31-057	2711381	1 1/2	Del.	1936	2/17/38
2	M-5745710	A11-313	2711383	1 1/2	"	"	"
3	M-5745721	A11-225	2711384	1 1/2	"	"	"
4	M-5752377	A11-225	2711383	1 1/2	"	"	"
5	PT-8121923	45-017	8621923	1 1/2	Wright Pickup	1939	1/13/41
6	PT-8122382	45-035	8621923	1 1/2	"	1939	1/13/41
7	T-1234492	42-030	8721923	1 1/2	"	1935	1/10/38
8	T-1234622	A11-237	8721923	1 1/2	"	1935	2/24/38
9	T-1235423	A11-313	8721923	1 1/2	"	1935	1/5/38
10	T-1235465	42-394	8721923	1 1/2	"	1935	1/10/38
11	T-1225885	A11-313	8721923	1 1/2	"	1935	1/10/38
12	T-1226758	A11-346	8721923	1 1/2	"	1935	1/5/38
13	T-1692275	63-090	81703-1571	1 1/2	Wheev. Stake	1938	1/13/41
14	T-3855385	43-109	6110	1 1/2	"	1933	5/15/36
15	T-745770	A11-200	8721923	1 1/2	Dodge	"	1939
16	TC-511267	A11-313		1 1/2	Ford Sedan	1940	5/7/41

December 31, 1961

Order Number	Speedometer Reading 12/31/61	Mileage in 1961	Number Gallons Gasoline Used	Total Cost for Calendar Year	Disposition
1	55,886	7,729	137	195.88	
2	54,489	13,503	771	191.22	
3	56,556	9,881	805	187.45	
4	58,653	6,193	173	173.30	
5	14,521	7,000	681	127.51	
6	13,858	5,974	383	99.62	
7	33,000	7,366	685	95.47	
8	38,397	3,613	275	37.03	
9	56,811	6,951	110	132.82	
10	43,960	8,361	651	135.85	
11	37,474	4,386	603	134.89	
12	45,996	4,143	260	114.37	
13	35,625	3,268	301	58.71	
14	42,840	710	92	20.12	
15	33,688	6,578	680	172.51	
16	41,585	6,111	367	119.99	



# MOTOR VEHICLES IN SOUTHERN APPALACHIAN STATES

As of June 18, 1942

Present License No.	License No. on 12-31-41	Engine Number	Make	Year Model	Con- tage	State	Speedometer Reading on 12-31-41
63-990	63-990	T-16-92275	Chev. Stake	1938	1- <del>2</del>	Va.	35,625
A5-326	A4-383	PT81-22597	Plym. Pickup	1939	1- <del>2</del>	Va.	18,601
A5-327	A5-735	K-2488381	Chev. Pickup	1939	2- <del>3</del>	Ga.	28,024
* A5-328	A1-954	M-59034-1-9	Chev. Sedan	1936	5-P.	Md.	74,955
A5-329	A12-485	T12-24165	Dodge Pickup	1935	1- <del>2</del>	N.C.	41,801
A5-330	A5-166	K-1923655	Chev. Pickup	1939	1- <del>2</del>	N.C.	14,717
A5-331	A11-619	T12-25986	Dodge Pickup	1935	1- <del>2</del>	N.C.	43,208
A5-332	A4-346	PT81-22350	Plym. Pickup	1939	1- <del>2</del>	N.C.	19,898
A5-333	A11-609	T12-25043	Dodge Pickup	1935	1- <del>2</del>	N.C.	43,493
A5-334	A12-483	T12-24546	Dodge Pickup	1935	1- <del>2</del>	N.C.	45,256
A5-335	A11-616	T-1226243	Dodge Pickup	1935	1- <del>2</del>	N.C.	59,097
A5-336	A5-852	T-1225435	Dodge Pickup	1935	1- <del>2</del>	N.C.	41,936
A5-337	A12-482	T-1225392	Dodge Pickup	1935	1- <del>2</del>	N.C.	46,246
A5-338	A4-522	T74-6519	Dodge Stake	1939	1- <del>2</del>	Va.	37,333
A5-339	A4-509	T74-6773	Dodge Stake	1939	1- <del>2</del>	N.C.	23,058
A5-340	A5-859	T12-25805	Dodge Pickup	1935	1- <del>2</del>	Tenn.	49,113
A5-341	A4-516	T74-6596	Dodge Stake	1939	1- <del>2</del>	Tenn.	35,832
* A5-342	56-633	K-6173564 (1)	Chev. Sta. Wag.	1936	-	Tenn.	38,754
A5-343	A4-324	PT81-21922	Plym. Pickup	1939	1- <del>2</del>	Tenn.	20,379
A5-344	54-608	24B-2230	Reo Stake	1934	2	Va.	34,217
A5-345	A4-325	PT81-22118	Plym. Pickup	1939	1- <del>2</del>	Tenn.	17,942
A5-346	A4-517	T74-6464	Dodge Stake	1939	1- <del>2</del>	Tenn.	29,747
A5-347	A5-861	T12-26169	Dodge Pickup	1935	1- <del>2</del>	Va.	45,969
* A5-348	54-374	K-6175122	Chev. Sta. Wag.	1936	-	Va.	31,365
X A5-349	A11-347	T12-24610	Dodge Pickup	1935	1- <del>2</del>	Va.	64,162
A5-350	A5-740	PT81-21907	Plym. Pickup	1939	1- <del>2</del>	Va.	27,860
A5-351	A11-350	T-1222400	Dodge Pickup	1935	1- <del>2</del>	Va.	41,622
A5-352	A6-890	T-1225318	Dodge Pickup	1935	1- <del>2</del>	Va.	49,240
A5-353	A11-349	T-1224472	Dodge Pickup	1935	1- <del>2</del>	Va.	58,461
A5-354	A11-351	T-1226496	Dodge Pickup	1935	1- <del>2</del>	Va.	56,121
A5-355	A14-212	PT81-22136	Plym. Pickup	1939	1- <del>2</del>	Va.	14,653
A5-356	A11-352	K-5741849	Chev. Pickup	1936	1- <del>2</del>	Va.	61,681
A5-357	A14-201	T12-25119	Dodge Pickup	1935	1- <del>2</del>	Va.	62,893
A5-358	A4-395	PT81-22382	Plym. Pickup	1939	1- <del>2</del>	Ga.	13,858
A5-360	A11-353	M-5745638	Chev. Deluxe	1936	1- <del>2</del>	Va.	64,406
A5-361	A14-202	T12-24697	Dodge Pickup	1935	1- <del>2</del>	Va.	54,842
* A5-362	A6-534	6595278	Pontiac Sedan	1939	5-P	Va.	43,880
* A5-363	A13-058	18-5315287	Ford Coach	1940	5-P	W.Va.	41,585
A5-364	A5-747	PT81-21923	Plym. Pickup	1939	1- <del>2</del>	W.Va.	14,524
A5-365	A14-224	M-5745721	Chev. Deluxe	1936	1- <del>2</del>	W.Va.	56,556
A5-366	31-990	M-5728144	Chev. Deluxe	1936	1- <del>2</del>	W.Va.	65,886
A5-367	42-894	T12-25465	Dodge Pickup	1935	1- <del>2</del>	W.Va.	43,960
A5-368	42-898	T12-24492	Dodge Pickup	1935	1- <del>2</del>	W.Va.	33,000
A5-370	A11-345	M-5745710	Chev. Deluxe	1936	1- <del>2</del>	Va.	64,489
A5-371	A11-344	T12-25885	Dodge Pickup	1935	1- <del>2</del>	Va.	37,474

Continued on following page

\* Passenger Cars

X Dismantled

(1) In 1940 this vehicle was called a "Chev. Stake" and erroneously given the engine number K16173564.

MOTOR VEHICLES (Continued)

Present License No.	License No. on 12-31-41	Engine Number	Make	Year Model	Ton- nage	State	Speedometer Reading on 12-31-41
A6-887	31-989	M-5728086	Chev. Deluxe	1936	1 1/2	Va.	75,667
A6-889	A6-889	T12-25413	Dodge Pickup	1935	1 1/2	Va.	43,687
A11-343	A11-343	T12-25423	Dodge Pickup	1935	1 1/2	Va.	56,811
A11-346	A11-346	T12-26758	Dodge Pickup	1935	1 1/2	Va.	45,996
A11-612	A11-612	T12-26369	Dodge Pickup	1935	1 1/2	Va.	66,939
A11-614	A11-614	K-5742052	Chev. Pickup	1936	1 1/2	Va.	56,844
A11-617	A11-617	T-1226504	Dodge Pickup	1935	1 1/2	Va.	38,653
A11-618	A11-618	T-1224144	Dodge Pickup	1935	1 1/2	Va.	53,549
A12-484	A5-855	T-1224490	Dodge Pickup	1935	1 1/2	Va.	55,392
A14-221	43-107	T-1224622	Dodge Pickup	1935	1 1/2	Va.	38,397
A14-222	A4-510	T74-6770	Dodge Stake	1939	1 1/2	Va.	33,688
A14-223	31-951	M-5752877	Chev. Deluxe	1936	1 1/2	Va.	58,653











# BLISTER RUST CONTROL, NORTH CENTRAL REGION, 1941

<u>Table of Contents</u>	<u>Pages</u>
General Summary . . . . .	1-40
Region . . . . .	1-2
Illinois . . . . .	3-4
Indiana . . . . .	5-6
Iowa . . . . .	7-8
Michigan . . . . .	9-11
Minnesota . . . . .	12-14
Ohio . . . . .	15-17
Wisconsin . . . . .	18-20
Detailed Narrative Report . . . . .	21-42
Foreword . . . . .	21
Organization . . . . .	21
Organization Chart . . . . .	22
Authorization for Work . . . . .	23
Spread of Rust . . . . .	23-24
White Pine . . . . .	24
General . . . . .	25
Ownership . . . . .	26
Survey Work . . . . .	26-27
Pre-eradication Survey . . . . .	26
Re-survey . . . . .	26-27
Local Control in 1941 . . . . .	27-32
General . . . . .	27-28
Illinois . . . . .	28
Indiana . . . . .	28
Iowa . . . . .	28
Michigan . . . . .	29-30
Minnesota . . . . .	30-31
Ohio . . . . .	31
Wisconsin . . . . .	31-32
Local Control Accomplishments to December 31, 1941 . . . . .	32-34
Checking . . . . .	34-35
Regular . . . . .	34
Post-Check . . . . .	34-35
Nursery Sanitation . . . . .	35
Cultivated Black Current Elimination . . . . .	35-36
Canker Pruning . . . . .	36
Control Zone Boundary Marking . . . . .	36



## Table of Contents (Continued)

Page

Deforestation Statistics . . . . .	31-34
Japanese Beetle Trapping . . . . .	35
Costs . . . . .	39-40
Number of Man-hours Employment . . . . .	40-42
Compensation Cases . . . . .	42-43
Automobile Accident Cases . . . . .	43
Construction and Repair of Equipment . . . . .	43
Results to Effectiveness of Control . . . . .	44-81
Pine Infection . . . . .	44-59
Effectiveness of Control in preventing pine infection after Elites Eradication . . . . .	44-46
Comparison of Protected and Unprotected Pine Areas . . . . .	46-54
Chippewa County, Wisconsin Study Plots . . . . .	49-51
Delta County, Michigan Study Plots . . . . .	52-54
Elites Rust Canker Studies . . . . .	55-59
Annual Extension of Canker . . . . .	56
Pine Killed before Elites Rust Canker became Visible on Pine Growth . . . . .	57-59
Elites Infection Studies . . . . .	60-72
Reports of Elites Infection Studies . . . . .	60
Pine under Observation . . . . .	60-61
Procedures Used in Calculation of Elites Infection Data . . . . .	62
Potential Damping Power of Wild Elites on the Detroit Lakes Pine Infection Study Plot . . . . .	62-71
Relative Amounts of Elites Rust Present on Elites Species . . . . .	62-65
The Potential Damage Factor per Unit of Foliage for each Species of Elites . . . . .	66-67
The Potential Damage Factor for Species of Elites within any Particular Area . . . . .	68-70
Summary Discussion . . . . .	71
Potential Danger to White Pine from Elites Rust Inoculum pro- duced on Secondary Foliage . . . . .	71-72
Elites Regeneration after Eradication . . . . .	73-79
Effect of Fire on Elites Regeneration after Eradication . . . . .	74-79
Regeneration of <i>E. grandis</i> after Eradication in absence of Other Known Ecological Disturbances . . . . .	75
Comparison of <i>E. grandis</i> Seedling Growth and Develop- ment after Eradication on an Area Burned and one Unburned . . . . .	76-79
General Summary of Effectiveness of Control Studies . . . . .	79-81



## Table of Contents (Continued)

### Table

- 1 - Pre-eradication Surveys Performed in North Central Region, 1941,  
by Programs and States.
- 1a - Resurvey Work, North Central Region, 1941
- 2 - Summary of Initial Local Control by States and Agencies, North  
Central Region, 1941
- 2a - Summary of Re-eradication by States and Agencies, North Central  
Region, 1941
- 2b - Summary of Initial and Re-eradication Work, by States and Agencies,  
North Central Region, 1941
- 2c - Summary of Initial Local Control by States and Ownerships, North  
Central Region, 1941
- 2d - Summary of Re-eradication, by States and Ownerships, North Central  
Region, 1941
- 2e - Summary of Initial and Re-eradication by States and Ownerships,  
North Central Region, 1941
- 3 - Summary of Initial Local Control, by Agency and Ownership, North  
Central Region, 1941
- 3a - Summary of Re-eradication by Agency and Ownership, North Central  
Region, 1941
- 3b - Summary of Local Control, Initial and Re-eradication, by Agency  
and Ownership, North Central Region, 1941
- 4 - Results of Checking after Ribes Eradication, North Central  
Region, 1941
- 5 - Post-checking in 1941, of Areas previously worked, North Central  
Region
- 6 - Status of Control, by States, North Central Region, on  
December 31, 1941
- 7 - Status of Control by States and Ownership Classes, North Central  
Region, 1941
- 8 - Summary of Initial Local Control by States, from Inception to  
December 31, 1941, North Central Region.
- 8a - Summary of Re-eradication by States from Inception to December 31,  
1941, North Central Region
- 8b - Summary of Local Control, Initial and Re-eradication, by States,  
from Inception to December 31, 1941, North Central Region
- 9 - Summary of Nursery Sanitation Work Performed in the North Central  
Region, 1941
- 10 - Cultivated Black Currant Elimination, North Central Region, 1941
- 10a - Analysis of Cultivated Black Currant Recheck, North Central  
Region, 1941
- 11 - Cumulative Cultivated Black Currant Elimination, North Central  
Region, to December 31, 1941
- 12 - Expenditures for All Blister Rust Control Work, Milwaukee Office, 1941
- 12a - W.P.A. Administrative Expenditures, Milwaukee Office, Calendar Year 1941
- 12b - Total North Central Region Expenditures Classified according to States  
and Agencies, 1941
- 12c - Total North Central Region Expenditures Classified according to State  
and Activity, 1941
- 12d - Summary of Expenditures, by Agencies and Activities, North Central  
Region, Calendar Year 1941.



## Table of Contents (Continued)

### Table

- 104 - Total North Central Region Expenditures Classified into Salaries and Wages and Other than Wages, 1941
- 107 - Actual Man-months, Expenditures and Costs per Man-month, Emergency Funds, Exclusive of Administrative Funds, North Central Region, Calendar Year, 1941
- 108 - W. P. A. Administrative Costs, by States, 1941
- 11 - Current and Cumulative Summary of Canker Pruning, North Central Region, to December 31, 1941
- 14 - Cumulative Summary of Control Zone Boundary Marking, North Central Region, to December 31, 1941
- 16 - Approximate Number of Man-months Employment on Blister Rust Control Activities, Regional Office, Milwaukee, Wisconsin, 1941
- 68 - Man-months Employment on Blister Rust Control Activities, by Months and Programs, North Central Region, 1941
- 17 - Man-months Employment on Blister Rust Control Activities, All Programs, by Positions, Months and States, North Central Region, 1941
- 18 - Approximate Number Man-months Used on Federal W.P.A. Program, North Central Region, January 1 to December 31, 1941
- 19 - Compensation Cases Involving W.P.A. Workers Reported to the Milwaukee Office by States and Type of Injury, 1941
- 20 - Compensation Cases Involving W.P.A. Workers Reported to the Milwaukee Office by Months and Types of Injury, 1941
- 21 - Study Plots Established to Determine Effect of Ribes Radiation on Canker Formation in Upland Pine Hardwood Timber Type, 1941 Data, North Central Region
- 22 - Comparison of Tree Infection on Oscar J. Bischof Study Plot II, Protected, and Edward Elias Study Plot, Unprotected, Chippewa County, Wisconsin, 1941 Data
- 23 - Comparison of S. B. Cankers on the Oscar J. Bischof Study Plot II, Protected, and Edward Elias Study Plot, Unprotected, Chippewa County, Wisconsin, 1941 Data
- 74 - Comparison of Tree Infection on the Delta County, Michigan, Pine Infection Study Plots, 1941 Data
- 12 - Comparison of S. B. Cankers on the Escanaba City Pine, Protected, and Airport Area, Unprotected, Pine Infection Study Plots, 1941, Data
- 76 - Summary of Ribes Infection Study, North Central Region, 1941 Data
- 27 - Summary of Blister Rust Infection on Secondary Foliage of Ribes Species on the Detroit Lakes Pine Infection Study Plot, 1938-1941 Data

### Chart Numbers

- 1 - Showing by States, acres of Control Areas on Maintenance, Initially Worked but not on Maintenance and Unworked to December 31, 1941. Based on Table 6.
- 7 - Showing Acres of Control Area on Maintenance, Initially Worked but not on Maintenance and Unworked by Ownership Classes, on December 31, 1941. Based on Table 7.



## Table of Contents (Continued)

### Charts (Continued)

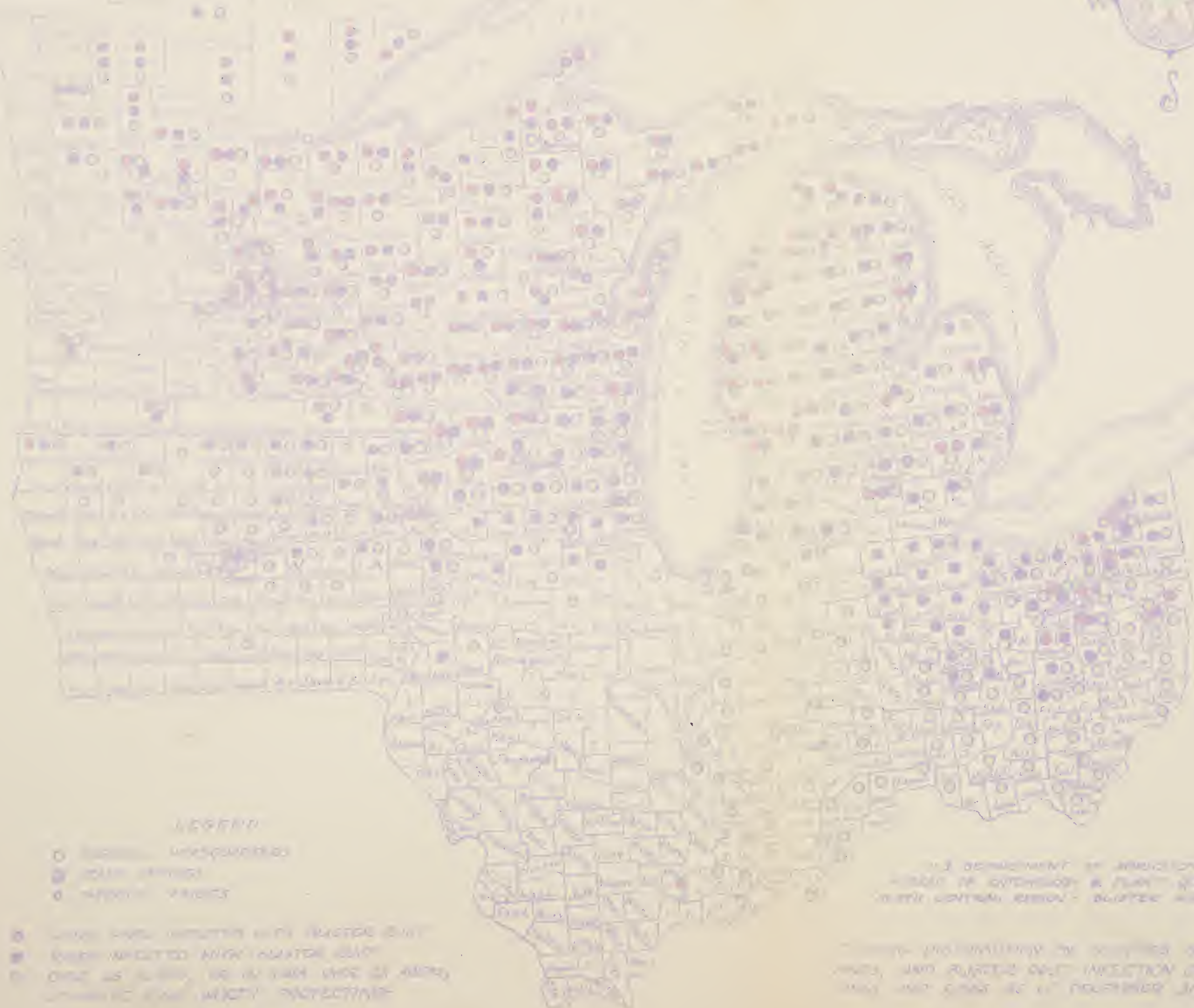
- 3 - Showing Gross Acres Worked by Initial Eradication and Reeradication, Yearly and Accumulatively to December 31, 1941. Based on Table 8 and Chart 3 of 1940 Annual Report.
- 4 - Results of Checkings Showing percent of Acres in each Feet of Live Stem Class after Eradication, 1941, by States. Based on Table 4.
- 5 - Showing Number of Locations of Cultivated Black Currant Bushes Found on Beebeek during 1941, by States. Based on Table 10a.
- 6 - Showing Number of Cultivated Black Currant Bushes Found and Destroyed to December 31, 1941, by States. Based on Table 11.
- 7 - Showing percent of Total North Central Region Expenditures Spent in Each State during 1941. Based on Table 12b.
- 8 - Showing percent of Expenditures, including Milwaukee office Costs provided, in each state made by each Agency, 1941. Based on Omnibus Supplementary Table 4, Sheet 1.
- 9 - Showing percent of Expenditures, including Milwaukee Office Cost provided in each State, Classified by Activities, 1941. Based on Omnibus Supplementary Table 4, Sheet 2.
- 10 - Showing percent of Expenditures in each State, including Milwaukee Office Costs provided, by Agencies, 1938-1941. Based on Omnibus Supplementary Table 4a, Sheets 1 and 1a.
- 11 - Showing percent of Expenditures in each State, including the Milwaukee office Costs provided, charged to each activity, 1938-1941. Based on Omnibus Supplementary Table 4a-Sheet 2.
- 12 - Expenditures in North Central Region, exclusive of Milwaukee Office, Annually 1933 to 1941, Classified by Activities. Based on Cost Tables in Annual Reports of 1933 to 1941.
- 13 - Expenditures in the North Central Region exclusive of Milwaukee Office, Annually 1933 to 1941, Classified by Agencies. Based on Cost Tables in Annual Reports, 1933 to 1941.
- 14 - Total Man-months Employment by States during Calendar Year, 1941. Based on Table 17.
- 15 - Showing the Approximate Number of Men Employed by Months and Agencies, 1941. Based on Table 18.
- 16 - Showing Approximate Number of Men Employed by Months and Position Grades, 1941. Based on Table 18.
- 17 - Showing Approximate Number of Men Employed on the Blister Rust Control Program in the North Central Region by Months and Years, 1934 to 1941. Based on Tables in Annual Reports for Years Concerned.
- 18 - Showing Number of Man-months Employed on the Blister Rust Control Program, by Years, 1934-1941. From Annual Reports of Years concerned.
- 19 - Showing Number of Men Employed on Federal W.F.A., by Months and Pay Classifications, 1941. Based on Table 18.
- 20 - Pictorial Summary of Chart showing Status of Insect Control to 1941, Man-months Employment and Funds Used in 1941.
- 21 - Percentage of Centers Visible at Increasing Years Elapsing between Year Pine Growth Developed and Year of Examination. Based on Text Table 10.
- 22 - Potential Damage Factor of Four Ribes Species at Varying Times of Year. Detroit Lakes, Minnesota. Based on Text Table 15.
- 23 - Comparison of Ribes cynosbati Seedling Growth and Development after Ribes Eradication on an Area Logged and Burned One Year after Eradication with that on an Area not Logged and Burned, Monroe County, Ohio.



Table of Contents (Continued)

Various Tables

- 1 - Summary of 1941 Rides Eradication
- 2 - Summary of 1941 Rides Eradication by Program
- 3 - Summary of All Other Control Work for 1941
- 4 - Summary of Expenditures for 1941
- 4 (Supplemental) Summary of Expenditures for 1941 with Mileage Costs Pro-rated to States
- 5 - Summary of Rides Eradication by Land Ownership, 1941
- 5 (Sheet 2) - Summary of Rides Eradication on National Parks, 1941
- 5 (Sheet 3) - Summary of Rides Eradication on Indian Reservations, 1941
- 5 (Sheet 4) - Summary of Rides Eradication on State and Private Lands, 1941
- 5 (Sheet 5) - Summary of Rides Eradication on National Forests, 1941
  
- 1A - Summary of All Rides Eradication, 1918-1941 (Inc.)
- 2A - Summary of All Rides Eradication by Program 1918-1941 (Inc.)
- 3A - Summary of All Other Control Work 1918-1941 (Inc.)
- 4A - Summary of All Expenditures, 1918-1941 (Inc.)
- 4A (Supplemental) - Summary of All Expenditures, 1918-1941 (Inc.)  
Including Mileage Office Costs Pro-rated to States.
- 5A - Summary of Rides Eradication by Land Ownership, 1918-1941 (Inc.)
- 5A (Sheet 1) - Summary of Rides Eradication on National Parks, 1918-1941 (Inc.)
- 5A (Sheet 2) - Summary of Rides Eradication on Indian Reservations, 1918-1941 (Inc.)
- 5A (Sheet 3) - Summary of Rides Eradication on State and Private Lands, 1918-1941 (Inc.)
- 5A (Sheet 4) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)
- 5A (Sheet 5) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)
- 5A (Sheet 6) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)
- 5A (Sheet 7) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)
- 5A (Sheet 8) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)
- 5A (Sheet 9) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)
- 5A (Sheet 10) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)
- 5A (Sheet 11) - Summary of Rides Eradication on National Forests, 1918-1941 (Inc.)



# LEGEND

- Surveyed, uninfested
- Surveyed, infested
- Surveyed, infested

- White pine sawfly infestation with isolated adult
- White pine sawfly infestation with isolated adult
- Only as seen, no adult seen (or of adult, immature and adult not detected)

Scale 0 10 20 30 40 50 miles

U.S. DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY & PLANT QUARANTINE  
WASHINGTON, D.C. 20250

White pine sawfly infestation by sawflies of white  
pines, and related sawfly infestation on white  
pines and other trees in December 31, 1951





## Status of Blister Rust Control Program as December 31, 1941

### North Central Region

#### Blister Rust Conditions

White pine blister rust is now found throughout the important white pine producing areas of the North Central Region. Local spread and intensification are taking place each year particularly in the northeastern portion of Minnesota. During 1941, blister rust on white pine was found for the first time in Lake County, Michigan, Mahanomen and Wadena Counties, Minnesota and Iron, Iron and Richland Counties in Wisconsin. Blister rust on ribes was found for the first time in Wadena County, Minnesota and Licking County, Ohio. Ribes infection has been found in each of the North Central states, but to date no pine infection has been found in either Illinois or Indiana.

#### White Pine

There are approximately 3,373,828 acres of white pine in the North Central Region, of which 1,123,548 acres are considered worth protecting. This white pine acreage and its protective zones comprise about 4,485,115 acres. The total white pine worth protecting is composed of 987,445 acres of native, and 136,103 acres of planted pine and approved planting sites.

The present ownership of white pine is divided as follows:

National Forests - - - - -	173,636 acres or 15.0%
Indian Reservations - - - - -	42,870 acres or 3.4%
National Parks and Recreational Areas - -	498 acres or 0.1%
Other Public, State and County - - - - -	302,282 acres or 26.9%
Private - - - - -	598,424 acres or 53.1%
Total - - - - -	1,122,548 acres or 100.0%

#### Status of Control

The status of control as of December 31, 1941 is shown as follows:

Acres white pine and W.P.P.S. worth protecting - - - - -	1,122,548
Acres white pine and W.P.P.S. protected initially - - - - -	904,556
Acres white pine on maintenance - - - - -	136,163
Percent pine protected initially - - - - -	71.7
Percent pine on maintenance - - - - -	12.1

#### Nursery Sanitation

During 1941, 28 nurseries containing 26,980,422 white pines were protected by removing 37,586 ribes from 9,390 acres of control area. A total of 461 man-days was spent on this work. Many of the white pine nurseries are considered to be on maintenance and will require only periodic inspections.





## Status of Blister Rust Control Program on December 31, 1941

### Illinois

#### Blister Rust Conditions

No new locations of blister rust were found during 1941. To date, blister rust has been found on ribes in ten northern counties. Approximately 3,203 white pines were examined at 37 locations and found free from rust. No infection has yet been located on white pines.

#### White Pine

There have been mapped 3,455 acres of white pine and approved planting sites worth protecting with a total of 24,908 acres of control area. This acreage of white pine is divided, by ownership, approximately as follows:

Other Public	- - - - -	1,186 acres or	34.3%
Private	- - - - -	2,269 acres or	65.7%
Total	- - - - -	3,455 acres or	100.0%

#### Status of Local Control

Acres W.P. and W.P.P.S. worth protecting	- - - - -	3,455
Acres W.P. and W.P.P.S. given initial working	- - - - -	5,120
Acres W.P. and W.P.P.S. placed on maintenance	- - - - -	543
Percent initially protected	- - - - -	90.3
Percent on maintenance	- - - - -	15.6

#### Nursery Sanitation

During 1941 sanitation work was carried on at seven private and one state-owned nursery. These nurseries contained 371,000 white pine seedlings and transplants. A total of 186 acres was protected by removing 4,516 wild and one cultivated ribes bushes from 2,520 acres of control area. Most nurseries are now ready for maintenance and will require only periodic inspections.

#### Cultivated Black Current Elimination

All cultivated black current elimination work was performed except in connection with nursery sanitation. One *R. nigrum* bush was destroyed at the Olney Nursery. To date, 581 of these bushes have been destroyed at 65 locations.

#### Recommendations for Future Work

It is recommended that adequate funds be provided to continue the protection of white pine plantations as rapidly as they become established and to perform the necessary re-eradication of ribes from existing pine stands. Due to the scarcity of available labor during the present war it became necessary to increase informational work to inform the individual white pine owners of the necessity for providing their own labor in protecting their pine stands.











## Status of the Blister Rust Control Program in December 31, 1941

### Indiana

#### Blister Rust Conditions

During 1941 no additional blister rust infection was found on either pines or ribes. To date, rust has been found on ribes in four northern Indiana counties; viz., Porter, La Porte, St. Joseph and La Grange. No infected white pine has been found since 1910 when rust was discovered on imported white pine seedlings in Gibson County. These white pine seedlings were destroyed.

#### White Pine

White pine is being extensively planted in Indiana for watershed protection, soil erosion control, windbreaks, ornamental and reforestation purposes. There are approximately 387 acres of native pine and 5,994 acres of planted pine within the state. Approximately 1,976 acres of white pine are in public ownership and 4,018 acres owned by private individuals, estates, etc.

#### Status of Local Control

Acres W.P. and W.P.F.S. worth protecting - - - - -	8,561
Acres W.P. and W.P.F.S. given initial protection - - - - -	5,441
Acres W.P. and W.P.F.S. placed on maintenance - - - - -	2,024
Percent initially protected - - - - -	65.7
Percent on maintenance - - - - -	33.8

#### Nursery Sanitation

The Soil Conservation Service Nursery at Washington, Indiana, was reworked during 1941. The nursery and protection zone are in a good sanitary condition. Only six cultivated ribes were found and destroyed. There are five white pine producing nurseries in Indiana. All have been protected by the removal of ribes.

#### Cultivated Black Currant Elimination

No work was done during 1941. Locations of cultivated black currants are being noted and a record made of each location during the course of other work.

#### Recommendations For Future Work

It is recommended that more effort be put forth on informational activities in order to acquaint both private pine owners and cooperating agencies with the necessity for selecting planting sites which are ribes free or can be easily made so. This is urgent especially during the present war when available labor is scarce. It will be necessary that the planter of white pine also provide the means for its protection.





Scale of 1000



Scale of 1000



Legend:  
 (Green) The population  
 (Yellow) The white population  
 (Purple) The colored population  
 The size of each of  
 these is proportional  
 to the number of people in  
 each county.

Map of Indiana showing the distribution of the population in 1880.





Iowa

Blister Rust Conditions

No infection on either pines or pines was found during 1941. To date, blister rust has been found on native white pine in Dubuque County and on nursery stock in Story and Lyon Counties. Rust on pines has been found in twenty-two counties.

White Pine

There are approximately 3,958 acres of white pine worth protecting in Iowa. The majority of this pine is scattered over the northeastern one-third of the state in the form of shelterbelts. Only 100 acres of white pine is native.

The ownership of this pine is listed as follows:

Eastern Service - - - - -	40 acres on	4.25
Quaker Farms - - - - -	1,383 acres on	4.75
Private - - - - -	2,535 acres on	97.13
Total - - - - -	3,958 acres on	106.13

Status of Control

Acres W.F. and W.F.F.B. worth protecting - - - - -	3,958
Acres W.F. and W.F.F.B. given initial spraying - - - - -	3,869
Acres W.F. and W.F.F.B. on maintenance - - - - -	100
Forest protected initially - - - - -	14.0
Forest on maintenance - - - - -	14.7

Nursery Stock

All white pine nurseries in Iowa are considered to be on maintenance. Thirty of the four nurseries were retained during 1941 and found to be rust-free. The three nurseries retained contained approximately 277,000 white pines.

Outstanding Disease Control Elimination

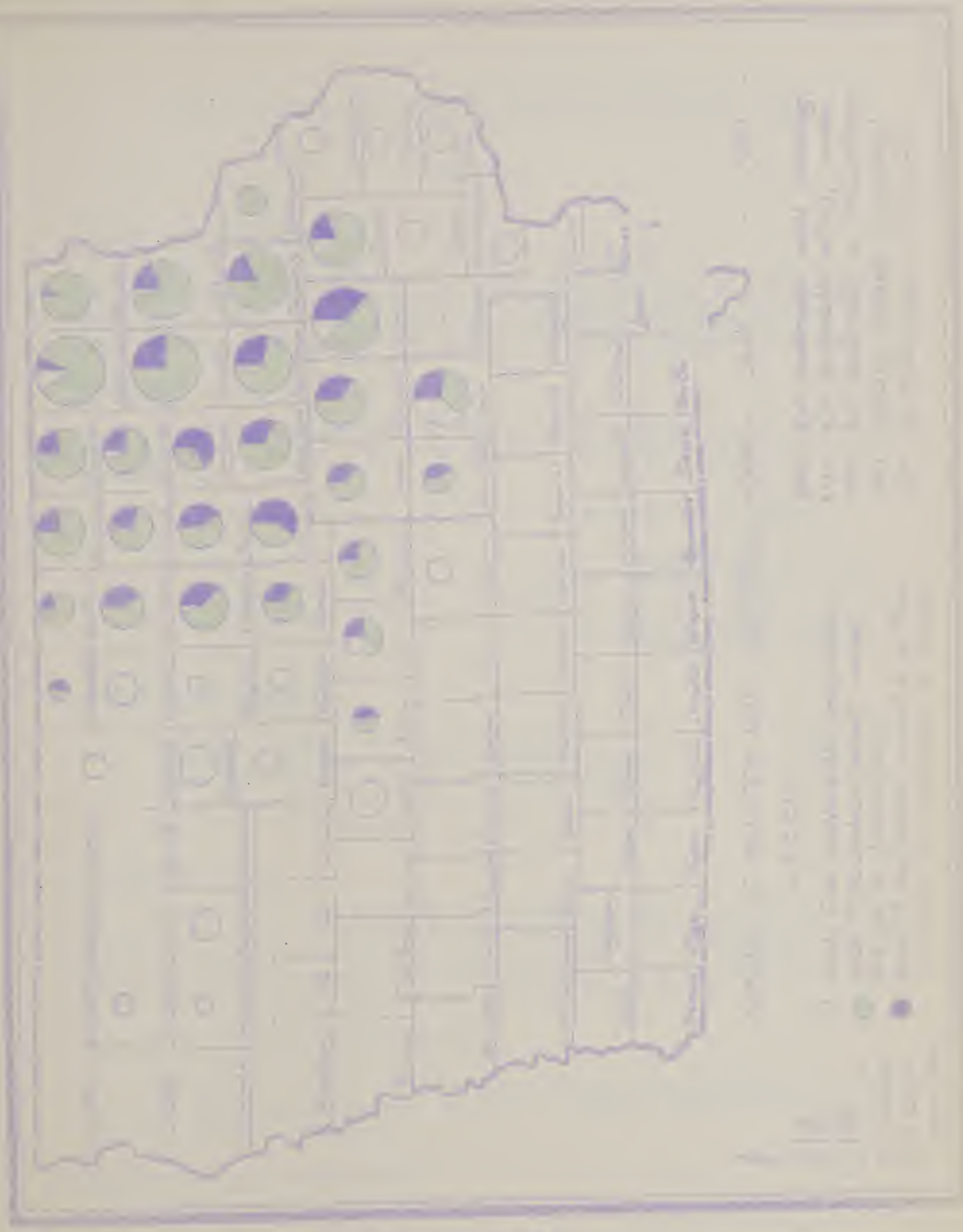
This activity continued during 1941. To date, 2,500 bushes have been removed from 1,000 locations. This work is now considered about 80% completed in that portion of the state where white pine.

Recommendations for Future Work

It is recommended that informational work be expanded to reach more individual pine owners. Since available manpower and funds are scarce it will become necessary for individual pine owners to assist in the protection of their pine stands. Every effort should be made to provide initial protection to all white pine stands before blight has become better established and more widespread.











## Status of Blister Rust Control Program on December 31, 1941

### Michigan

#### Blister Rust Conditions

Blister rust on white pine has been found in 53 counties and on ribes in 79 counties. During 1941, Lake County was added to the list of those counties in which rust on white pines or ribes has been found. One canker on 1837 wood was found. Rust is now considered generally distributed throughout the state.

#### White Pine

A total of 443,187 acres of white pine is considered worth protecting. This acreage is composed of 366,389 acres of native pine and 76,798 acres of planted pine.

The present ownership of white pine is distributed as follows:

Federal	51,380 acres or 11.6%
State	163,966 acres or 34.7%
County and Municipal	11,191 acres or 2.5%
Private	228,290 acres or 51.2%
Total	443,187 acres or 100.0%

#### Status of Local Control

Acres W.F. and W.P.F.B. worth protecting	443,187
Acres W.P. and W.P.F.B. given initial working	366,389
Acres W.F. and W.P.F.B. placed on maintenance	24,048
Percent protected initially	81
Percent on maintenance	19

#### Nursery Sanitation

During 1941 three nurseries containing 5,941,000 white pines were given sanitation workings by removing 9,722 ribes from 3,290 acres of control area. This work required an expenditure of 104 man-days and cost \$271.58. There are seven white pine growing nurseries in Michigan. Six of these have been placed on maintenance and will require only periodic inspections.

#### Cultivated Black Current Elimination

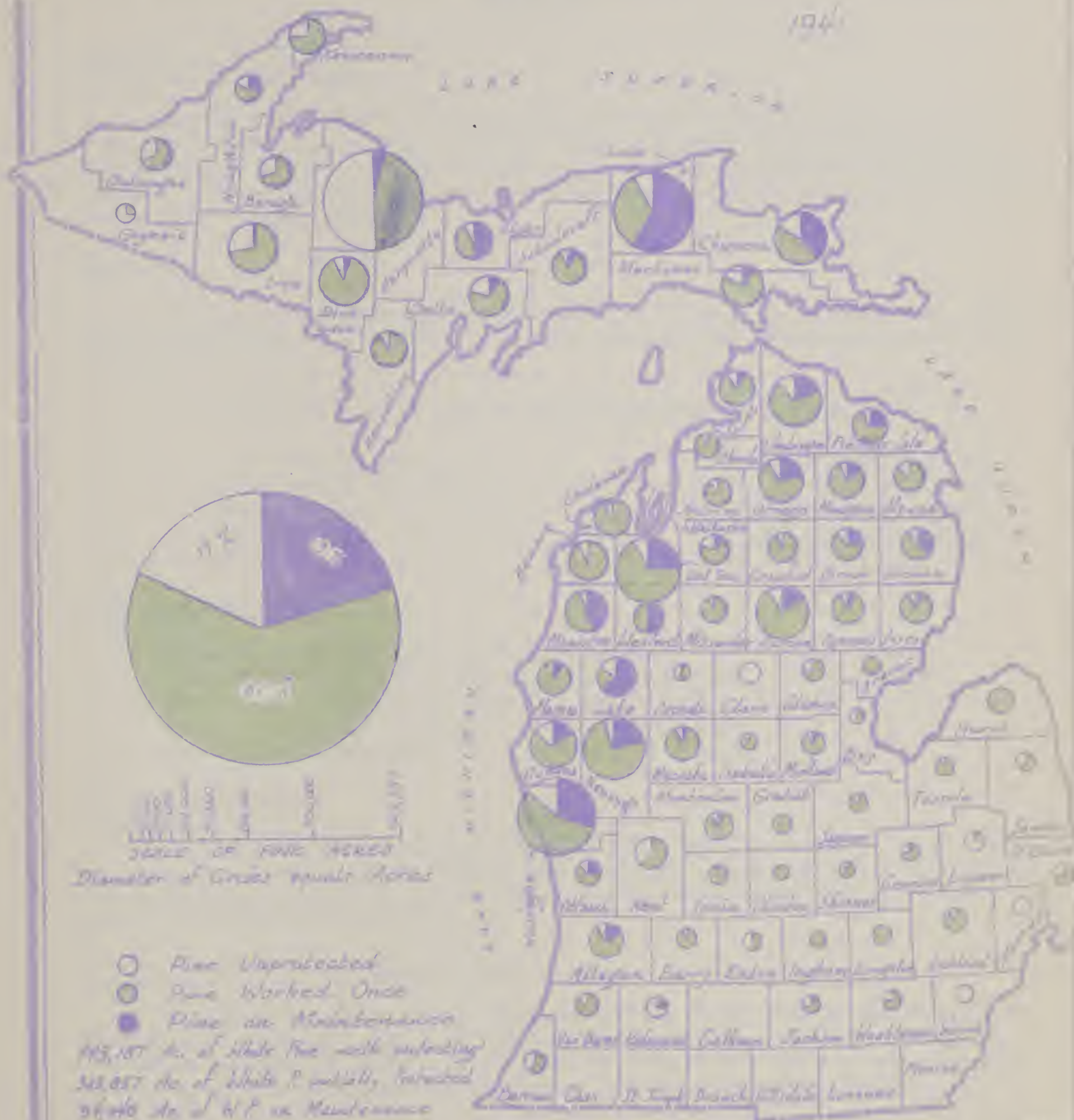
The European black current has been practically eliminated from the important pine growing counties. A total of 142,740 bushes has been found of which 142,088 were destroyed.

#### Recommendations for Future Work

Due to the scarcity of available labor during the present war it is recommended that informational work be directed toward the individual pine owner in order to convince him of the necessity for providing help in protecting his











## Status of Blister Rust Control Program on December 31, 1941

### Minnesota

#### Blister Rust Conditions

During 1941, blister rust was found on white pine for the first time in Mahanomen and Wadena Counties. Rust on ribes was found for the first time in Wadena County in 1941. To date, rust has been found on ribes in 55 counties and on pine in 52 counties. Blister rust is spreading rapidly especially in the north-eastern part of the state.

#### White Pine

There are approximately 281,562 acres of white pine in Minnesota considered worth protecting. This acreage is divided into 253,083 acres native and 28,479 acres planted pine.

The ownership of this pine is divided approximately as follows:

U. S. Forest Service - - - - -	94,136 acres or 33.4%
U. S. Indian Service - - - - -	19,267 acres or 7.4%
Other Public - - - - -	88,810 acres or 31.5%
Private - - - - -	79,349 acres or 28.4%
Total - - - - -	281,562 acres or 100.0%

#### Status of Local Control

Acres W.P. and W.P.F.S. worth protecting - - - - -	281,562
Acres W.P. and W.P.F.S. given initial protection - - -	152,809
Acres W.P. and W.P.F.S. placed on maintenance - - - -	31,678
Percent initially protected - - - - -	54.3
Percent on maintenance - - - - -	11.2

#### Nursery Sanitation

During 1941, seven nurseries were given sanitation work. These seven nurseries contained 5,537,588 white pine seedlings and transplants. Several of the nurseries in Minnesota are now in an excellent condition and will require only periodic examination for ribes.

#### Cultivated Black Current Elimination

During 1941 initial and check cultivated black current elimination was continued in Minnesota. To date, 25,308 bushes have been destroyed on 8,320 locations. Initial cultivated black current elimination has now been completed within the pine growing counties. Check will be carried on when considered necessary.























## Status of Blister Rust Control Program as December 31, 1941

### Wisconsin

#### Blister Rust Conditions

During 1941 blister rust was found on white pine for the first time in Dane, Iron and Richland Counties. White pine blister rust has been found on white pine in 94 counties and on pines in all 71 counties.

#### White Pine

There are approximately 387,000 acres of white pine and approved planting sites worth protecting in Wisconsin. This acreage of white pine is composed of 353,434 acres of native pine and 33,566 acres of planted and approved planting sites.

The present ownership of white pine is divided approximately as follows:

U. S. Forest Service - - - - -	28,398 acres or 7.3%
U. S. Indian Service - - - - -	30,393 acres or 7.9%
Other Public - - - - -	80,104 acres or 15.6%
Private - - - - -	267,711 acres or 65.2%
Total - - - - -	387,000 acres or 100%

#### Status of Local Control

acres white pine and W.F.P.S. worth protecting - - -	387,000
acres white pine and W.F.P.S. given initial marking -	265,629
acres white pine and W.F.P.S. placed on maintenance -	53,278
Percent pine protected initially - - - - -	68.6%
Percent on maintenance - - - - -	13.7%

#### Nursery Sanitation

During 1941, sanitation work was conducted at five of the ten important white pine producing nurseries. These ten nurseries contain approximately 21,500,000 white pines. Three nurseries are now considered to be on maintenance and will require only periodic inspections.

#### Cultivated Black Currant Elimination

Initial work has been completed in 52 of the northern pine producing counties. Backhack work has been completed in 42 counties and partially completed in the remaining ten. To date 37,048 bushes have been removed from 8,595 locations. All bushes have been destroyed where it was considered necessary.

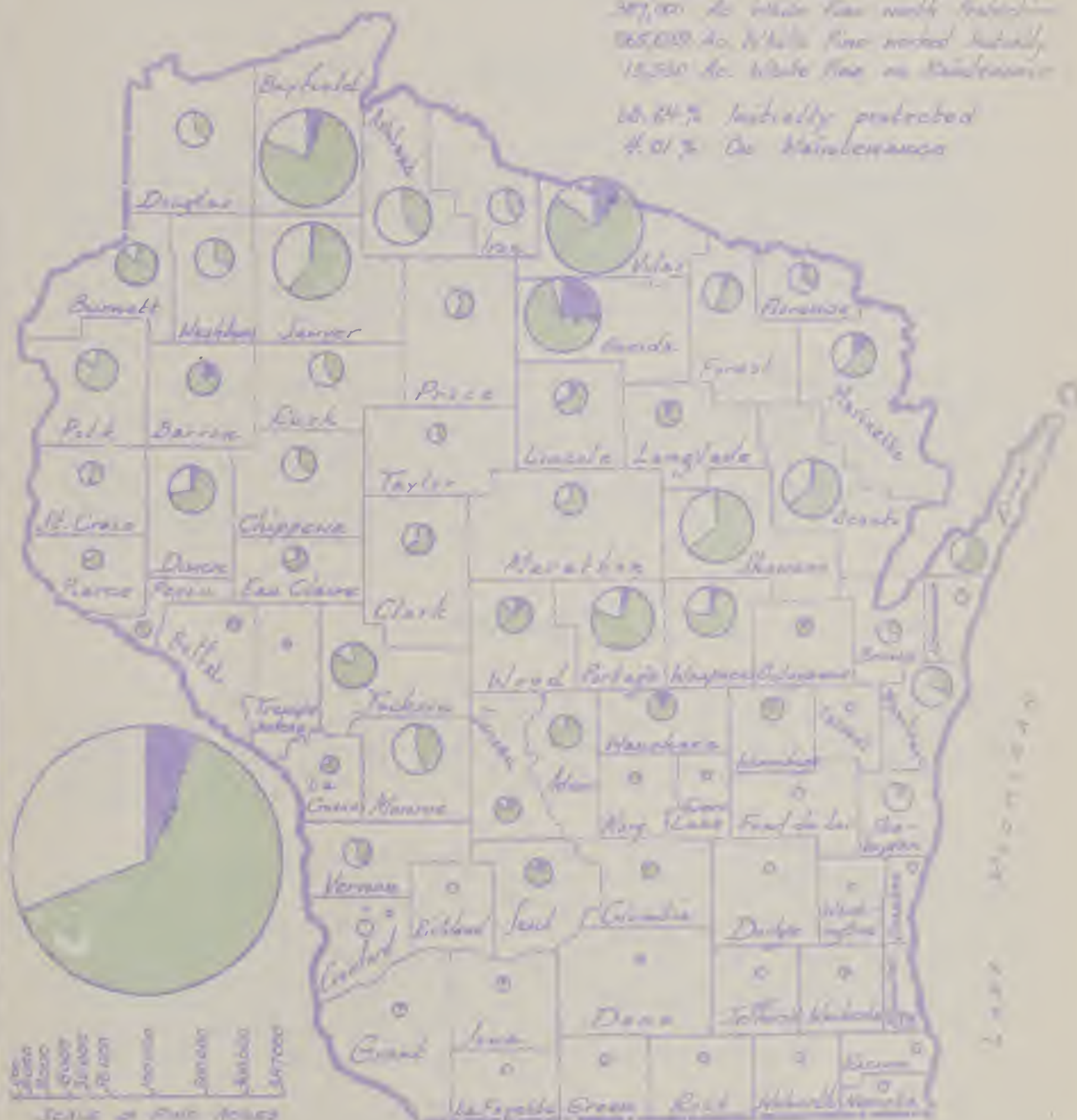




# STATUS OF CONTROL WORK IN WISCONSIN 1911

- Area unprotected
- Area worked initially
- Area in maintenance

307,000 Ac. White Pine north section  
 165,000 Ac. White Pine worked initially  
 15,500 Ac. White Pine in maintenance  
 18.64% Initially protected  
 4.01% In maintenance







## DETAILED NARRATIVE REPORT, 1941

### Foreward

The year 1941 marked the end of Federal Emergency Relief projects for blister rust control. Appropriations for that purpose expired on December 31, 1941. Greater use was made of Bureau sponsored WPA projects within the state program. Beginning July 1, 1941, under Lee Act, a small amount of Regular funds for the express purpose of performing ribes eradication on state and private lands, matched by equal amounts of state funds, were made available for the first time. Only limited amounts of these funds were used.

The same general organization of material in the 1941 Annual Report has been followed as in the 1940 Annual Report. Table number designations, as in 1940, have been made the same for all state and regional reports. Thus, Tables 1 to 12 refer to the same subjects throughout. Auxiliary tables, dealing with the subject of a table already numbered, have been given that table number with a letter of the alphabet added. Tables dealing with new subjects have been given numbers beyond 12.

### Organization

The same general organization was in effect for 1941 as in 1939 and 1940. A few personnel changes have been made as follows. Miss Gertrude M. Esholt, secretary in the Milwaukee office, transferred to the Division of Foreign Plant Quarantines in May 1941 and her position was filled by Mrs. Clara M. Winkler.

Mr. Donald R. Lubberts, State Leader in Iowa, resigned April 30, 1941 to take up general farming. His position was filled temporarily, until October 15, 1941, by Mr. Elmer L. Wilson. Prior to May 31, when Mr. Wilson assumed temporarily the position of state leader in Iowa, he was employed by the Division of Domestic Plant Quarantines at Chicago. On October 15, 1941, he was transferred to the Division of Foreign Plant Quarantines at New York City. During the period, October 16 to December 31, the position of state leader of Iowa was temporarily filled by Mr. Robert G. Hayes employed on a Bureau sponsored WPA blister rust control project in Iowa.

On May 11, 1941, our Upper Michigan District Leader, Glenn R. Allison, received military furlough to assume the duties as a second lieutenant reserve officer in the Army. His position as district leader in Upper Michigan was temporarily filled by Mr. Spar H. Sager.

The control organization in the North Central Region is shown in the organization chart.











### Authorization for Work

As in the past several years the work in 1941 was continued under a Memorandum of Agreement drawn up by the responsible State agencies and the Bureau of Entomology and Plant Quarantine. This and other memoranda governing blister rust control work are shown in detail in the 1956 Annual Report. During 1941, as in 1940 and 1939, control work was performed by means of contributions from four general programs and agencies listed as follows:

- (1) State and Private
- (2) Regular funds, chiefly Bureau but including a small amount of Forest Service Regular Blister Rust Control funds.
- (3) Emergency Relief Administration made up chiefly of Bureau sponsored federal agency projects but also including Bureau sponsored projects within the WPA program in Iowa, Michigan, Minnesota, and Wisconsin. National Youth Administration funds were used in small amounts in Michigan, Minnesota, Ohio, and Wisconsin.
- (4) Civilian Conservation Corps as administered through the Forest Service, Indian Service, Park Service, Soil Conservation Service, and State.

### Spread of Rust

In general, 1941 could be classified as one of the wet seasons prevailing since and including 1937. As a consequence of favorable weather conditions for rust development, intensification of the Alcala in known areas of infection was observed and several additional new infection centers were found during 1941.

Rust on ribes was found in 1941 for the first time in Wadena County, Minnesota and Licking County, Ohio.

On white pine it was found in 1941 for the first time in Lake County, Michigan; Keweenaw, Mahanood and Wadena Counties, Minnesota; and Iron, Dane and Richland Counties in Wisconsin.

No new counties were added to the infection list either on pines or ribes in Illinois, Indiana or Iowa. However, very little scouting for the rust was done in these three States.

One reason for the small number of counties in which rust on pines or ribes was discovered for the first time in 1941 is that rust on either pines or ribes, or both, has already been found in the great majority of counties within the white pine belt in the Region. That 1941 was a good year for the rust to develop is evidenced by the greatly increased amount of rust on both hosts found in counties where previously the rust had been reported.

The general status of infection at the end of 1941 in each of the States was as follows:

#### Illinois

To date no pine infection has been found in Illinois. On ribes the rust has been located at various points in the ten northern counties, chiefly on



Ribes nigra. It is probable that 35 susceptible sites were given in Antennaria  
scouting for the rust on pine in these northern counties, pine infection would  
be limited. However, efforts were devoted chiefly to making pre-germination  
surveys and performing actual ribes eradication.

#### Indiana

Practically no scouting for the rust was done in 1941. The known rust  
situation remains the same as in 1939 and 1940, namely, rust had been observed  
on R. nigra at three localities in three northern counties. The only pine  
infection was reported as on imported white pine later destroyed in DeWitt  
County in 1910.

#### Michigan

Blister Rust is wide spread throughout the state. By the end of 1941 it  
had been found in varying degrees of infestation on pine in 19 counties and  
on ribes in 19 counties. There are only four counties in the extreme south-  
eastern corner of the state where rust on ribes has not been reported. In general,  
pine infection is heaviest in Upper Michigan, chiefly in Marquette and Dickinson  
Counties, where damage from the rust is quite heavy in unprotected pine stands.  
In Lower Michigan, pine infection is chiefly confined to the counties bordering  
Lake Michigan and Lake Huron.

#### Minnesota

By the end of 1941 rust on ribes bushes had been reported from 36 counties  
and on pine from 31 counties. The rust has been found intensifying at the  
greatest rate in northeastern Minnesota on the Superior National Forest. A  
great many cankers originating in 1937, 1938 and 1939 were found. Hundreds of  
cankers per tree are common. Owing to the general prevalence of ribes and favor-  
able climatic conditions along Lake Superior, there is a widespread and intensive  
development of the rust on the Superior National Forest. As a result of these  
very favorable weather conditions native white pine reproduction has come in by  
the millions. These new young trees are, however, being rapidly killed off by  
the equally intensive spread of the rust. Timely and effective eradication  
efforts will be necessary to reduce the inevitable loss of young white pines.

#### Ohio

To the end of 1941 rust on ribes had been reported from 20 counties and on  
pines from 10 counties. Infection is heaviest in the northeastern portion of  
the state.

#### Wisconsin

With the finding in 1941 of pine infection for the first time in Dodge, Iron  
and Richland Counties the whole northern two-thirds of the state can be solidly  
blocked in as containing pine infection. By the end of 1941 rust on ribes had  
been observed in all of the 11 counties. By the end of 1941 it had been found  
on white pine in 14 counties. In addition to pine infection, found for the  
first time in certain counties, it was discovered to be widespread and pine  
infection centers were located in counties previously reported.



## White Pine

### General

In the 1936 Annual Report the valuation of \$85,000,000 was placed on the white pine growing in the North Central Region. This figure is probably now too low in view of the rising prices for lumber and other products. However, no attempt will be made to revise this valuation figure.

Due to an abundance of rainfall and good facilities for fire control, particularly during the past five years, white pine is definitely on the increase through natural reproduction and planting. White pine is adapted to a wide range of soil and climatic conditions and this quality makes it an excellent tree for soil conservation planting. Particularly in Ohio, white pine is very widely used by farmers in connection with the Agricultural Adjustment Administration program.

The total acreage of white pine worth protecting in the Region is not a static figure. On the one hand it is decreased by logging and fire and on the other, it is increased by natural reproduction and by planting. Many areas originally classified as having insufficient pine to justify protection costs have been found on subsequent surveys to contain sufficient white pine through natural reproduction to justify such costs. During 1941 a considerable amount of postcheck and survey work changed the total control problem somewhat. By the end of 1940 there were shown 1,115,103 acres of white pine worth protecting. This figure, as a result of resurveys and postchecks, was reduced by nearly 143,000 acres below what was reported in 1939. However, in 1941 the total control problem was shown as 1,122,548 which was more than 6,000 acres greater than that reported in 1940.

That the artificial establishment of white pine is an important component of the white pine in this region is shown by the fact that of the 1,122,548 acres of white pine 165,103 acres or nearly 15% was planted white pine.

### Ownership

Our most recent figures on ownership classes are shown following. Inasmuch as the ownership status is constantly changing these figures can be considered only approximate:

U. S. Forest Service - - - - -	175,000 acres or	15.6%
U. S. Indian Service - - - - -	49,570 acres or	4.4%
Other Public (principally State) - - - - -	302,778 acres or	27.0%
Private - - - - -	596,414 acres or	53.1%
Total - - - - -	1,122,548 acres or	100.0%

These figures will be noted in Table 7 in which they are listed by states and ownership classes. It will be noted that in 1941 there is a slight increase in federal ownership and in private ownership and a decrease in state ownership over similar figures at the end of 1940.



## Survey Work

### Pre-eradication Survey

During 1941, as shown in Table 1, pre-eradication surveys were made of 49,359 acres of pine, of which 40,170 acres were considered worth protecting. To protect this acreage of white pine will require working a control area of approximately 189,061 acres. This survey was largely performed by men working on the federal army projects during the off season months. The largest amount of this activity was conducted in Minnesota chiefly in the northeastern portion. This area is more accessible in the winter time than in the summer because in the winter the lakes are frozen over making travel by snow shoes much easier and quicker than by foot and boat during the summer months. While it is admitted that winter does not disclose all of the young pine there are sufficient numbers of pines above the snow to enable proper classification and the small white pine reproduction buried by the snow is visible when the areas are worked by eradication crews later on. In the entire Region, 2,241 man-days were devoted to pre-eradication surveys, costing \$10,910.19.

### Resurvey

Resurvey work started on a relatively large scale in 1940 was continued in 1941. Resurveys were made of 138,857 acres of control area originally covered by pre-eradication survey several years ago. Of this total, 84,634 acres were thrown out as not worth protecting and 53,788 acres were retained. Resurvey is necessary particularly on areas initially covered by pre-eradication surveys made several years ago. At the beginning of the emergency program it was necessary to employ a relatively large number of workers during the winter months. Such workers were not sufficiently trained and not particularly well adapted to such work. The resurvey work is a very essential part in correcting the total control areas to be worked.

Classified as resurvey should be mentioned the office work necessary in connection with revising our permanent records. This made it possible to discard a considerable number of areas in some states, notably Ohio, where the estimated cost of protecting small plantings of pines, each less than five acres, was so high as to preclude the working of such areas on economic grounds.

The largest amount of actual field resurvey work was performed in Michigan. A considerable amount of this work was performed by men employed on State funds.

The total costs of resurvey, excluding the costs of back work, amounted to 799 man-days or \$385.15. The discrepancy between the man-days used and money costs is due to the fact that in Michigan the costs of this work were charged to "Other Field Data" although the number of man-days on resurvey was shown.

The resurvey work performed in 1941 is shown in Table 1a. Some of the more common reasons for discarding acreages of white pine on resurvey are:

- (1) Insufficient stocking. Value of pine will not justify cost of eradication.
- (2) Pine in swamps or edges with extremely heavy sides.
- (3) Pine mature, without reproduction, which can be harvested before damage from blister rust becomes severe.



- (4) Cutting of immature pine for pulp wood.
- (5) Loss by fire or plantation failure.

### Local Control, 1941

#### General

Local control work in this region was again carried on in cooperation with several work and land ownership agencies. Work done in 1941 is shown in Tables 2 to 2a, and Tables 3 to 3b, inclusive. As in the past several years the largest single work agency was the Federal Agency Project sponsored by the Bureau. Of the total of \$188,371.31 spent in the region on ribes eradication, \$146,148.23 was spent on the Federal Agency program.

Tables 2 and 2a give the summaries of initial eradication and re-eradication by states and agencies in 1941. It will be noted that in initial work 7,385,830 ribes were destroyed on 132,442 acres to protect initially 35,842 acres of white pine. These figures are quite decidedly lower than the accomplishments in 1940 when 221,728 acres of control area, or nearly 90,000 acres more, were worked.

More acreage was worked under re-eradication in 1941 than under initial eradication. On re-eradication 157,314 acres of control area were eradicated of 3,518,638 acres to give additional protection to 45,338 acres of white pine. This is an increase of approximately 40,000 acres of control area worked in 1941 over what was worked in 1940.

Tables 2c, 2d, and 2e give a summary of all local control work, initial and re-eradication, and total performed during 1941 by states and ownership classes. It will be noted that Wisconsin led the other states in performing both initial and re-eradication work with Michigan a close second. Although considerable less acreage was covered in Minnesota than in either of the other Lake States, the ribes per acre destroyed was highest, averaging nearly 200 bushes per acre.

In Tables 3 to 3b ribes eradication on work in 1941 is shown by agencies and ownership classes irrespective of states. During 1941, 132,442 acres of control area were initially worked of which 95,049 acres, or 70 percent were privately owned. On re-eradication approximately 72 percent of the acreage worked was privately owned. Control areas, both initially and on re-eradication, owned chiefly by the State and U. S. Forest Service, showed a poor second and third. If, however, these percentages are computed on the basis of pine protected, the picture is changed. While 70 percent of the initially worked areas was in private ownership, only 55 percent of the total pine initially protected was in private ownership. The reason for this discrepancy lies in the fact that in the protection of many of the private holdings the pine areas are in small blocks, notably in Iowa where the shelter belt of less than an acre in extent would have a protection area of about 55 acres. While 96 percent of such acreage is cultivated fields and does not need working, nevertheless, it is considered as part of the control area. On the other hand, the pine areas under state and federal ownership are in much larger blocks and hence the proportion of control area to pine area protected is much smaller. For instance, the approximate number of acres of control area initially worked to one acre of pine protected is as follows:



Forest Service - - - - -	1.8 acres
Indian Service - - - - -	2.0 acres
State - - - - -	3.0 acres
Private - - - - -	4.2 acres

Following is a summary of forest control work accomplished in 1941 in each state and some of the problems involved are summarized at the end of each state report.

#### Illinois

Forest control work in Illinois during 1941 was fairly evenly divided between initial and maintenance. Of the 3,037 acres worked in Illinois in 1941, 1,006 were worked initially and 2,031 were maintained. Only a small amount of initial work was done in 1941 and it is estimated that about 100 acres of initial work had previously been performed. Subsequent work under the WPA was largely confined to maintenance. Agencies performing initial work were the U.S. Forest Service, the U.S. Fish and Wildlife Service, the U.S. National Park Service, the U.S. Army, and private agencies also performed initial work. Most of the work performed in Illinois in 1941 was done on state land.

Approximately 50 percent of the 3,037 acres listed for protection in the state has been given initial protection and 16 percent is now on maintenance. With the exception of Pike State Park, Silver Lake State Park and a few other areas, most of the white pine stands worth protecting in the state are planted pines. It is hoped that by giving proper attention to the selection of relatively resistant seedlings and proper spacing and weeding program, the planting program will result in a small highly trained mobile crew of three or four men to do the necessary initial and maintenance work as it develops. There is a relatively large number of white pine plantations in the state. Many of these plantations have been established by the elimination of cultivated vines within the owner's yard.

#### Indiana

Only a very limited amount of work was done in Indiana, and this was entirely initial work performed under the WPA program. Funds were available only in the end of June 1941. A total of 4,000 vines was removed from 740 acres of white pine to protect 16 acres of planted white pine. This initial work required 17 man-days of labor.

The white pine problem in Indiana, as in Illinois, concerns chiefly planted white pine. Of the total of 3,331 acres of white pine listed for protection, 3,034 acres or 91 percent are planted white pine. To date initial eradication has been afforded 55 percent and 22 percent is on maintenance. Approximately the southern one-third of the state is a region in which vines are scarce or absent. Fortunately, excellent white pine planting sites can be found in this portion and the pine grows very vigorously. The major problem remaining in Indiana involves the protection of white pine in the northern part of the state where vines are more numerous. An active white pine planting program is in progress in Indiana chiefly through the Agricultural Adjustment Administration.



Initial control work in Iowa is principally confined to the protection of riparian and shelterbelts in private ownership. However, in the northern portion of the state, in Pottawatomie County, is an area now in state ownership where native white pine is found. During this period from July 1 to about the middle of October, no Federal Agency project for blight spot control had been approved. The work during this period was confined principally to the Pottawatomie and Pottawatomie Lake areas using a state sponsored WPA project. Of the 127 acres in state ownership worked during 1941, two-thirds of the work was re-eradication and maintenance initial work. Sites were quite abundant. On the 127 acres worked, 107,745 vines were destroyed at a cost of 94 man-days, to protect 120 acres of white pine. White pine shelterbelts were protected prior to July 1, 1941 and after October 1, 1941. The owners of shelterbelts assisted in this protection work. A total of 146 white pine shelterbelts was protected by removing 75,143 bushes from 4,500 acres at a cost of 37 man-days. A total of 141 shelterbelts was initially protected and the remainder destroyed by manual eradication.

The ratio of control work to acres of pine protected in Iowa is very high. The average shelterbelt contains about one-half acre of white pine. To protect the average shelterbelt requires the working of approximately 33 acres. For every acre of pine, therefore, it is necessary to look for vines on 66 acres. This is not a particularly serious matter because nearly all of the control work around white pine shelterbelts consists of manual eradication and the removal of vines. The principal problem involves principally the removal of multi-stemmed bushes and securing of fence lines. In 1941 it required an average of approximately 3.5 man-days for the protection of one shelterbelt.

To the end of 1941, 84.5 percent of white pine in Iowa had been given initial protection and 12.7 percent was on maintenance. It is expected that when the shelterbelts protected from 1934 to 1941 are reworked, the number of shelterbelts will be increased very greatly.

#### Michigan

Blight eradication work started earlier in 1941 than usual. Crews began pulling bushes by April 16. Of the 107,883 acres worked by all agencies, approximately 40 percent was initial work and 60 percent rework. Re-eradication work was performed on areas where post-check had shown that vines were abundant and that the danger from infection was great. Since many of these areas were among the most valuable, emphasis was placed on seeing the protection work already done. Also, under the WPA program the availability of labor was a limiting factor.

Considering both initial and re-eradication work, 31,451 acres of white pine were protected by removing 2,501,544 vines from 107,883 acres at a cost of 12,049 man-days. Most of this work was done under WPA programs. The Federal Agency project supplied labor until June 30, 1941. Approval for the continued operation of the Federal Agency project, effective July 1, was delayed until the season was almost over on September 29. During the period July 1 to about 15th of September work was performed in the state, either by a Bureau sponsored project within the state program or a Federal Agency project. On August 19, a Bureau sponsored project was started and operated until September 29. Thus, for a large portion of the eradication season no WPA crews were operating and only a small amount of work on Lee and Ford's was performed. Fortunately, the fall season was still making vine eradication work to be performed well into November.

A small amount of work was done by Forest Service DCC, National Youth Administration, State and Regular-Cooperative funds. The work done under the latter two agencies was primarily spotting work in which a considerable savings could be gained with the expenditure of a few man-days.













In Table 3 will be found a summary of initial work covered by studies from November to December 1941. The work from January to March is grouped and the work from April to June is shown separately. The addition of these two periods gives the total work done in the year of 1941. If the work done in the initial year is desired, it will be necessary to refer to the 1942 annual report.

In Table 3 all of the savings initially worked is reported. This figure will differ materially from the similar figure in Tables 5 and 7 because in the latter two tables the savings are on a net basis. Due to the fact that some pine and control areas are not stable but are changing because of burning, logging, erosion, etc., some of the savings initially worked are not reported. For example, the pine area which was 1000 acres and is included in the net savings. For example, in Table 7 the net control area initially worked is 2,991.77 acres. The savings reported, worked for the same period, is 2,131.50 acres or 857.27 acres more than the net savings.

Table 3 is interesting chiefly in that it shows average work done. The gross savings for all initial work done in the region shows 65 acres pulled per acre at a cost of 0.26 man-days, or \$0.77. There was an average of 245 trees pulled per acre. During 1941 there was an average of 56 trees pulled per acre costing 0.22 man-days or \$0.74.

The summary given in Table 3a, average figures shows 31 trees per acre costing 0.22 man-days or \$0.66. It is interesting to note that the average number of trees per acre on re-eradication was exactly half of that found on initial eradication. Thus, while the trees per acre on re-eradication was half that found on initial eradication the man-days required were still similar. The reason for this higher cost per tree pulled on re-eradication is to be expected. The trees are generally more evenly distributed, there is a greater percentage of trees in areas in which it is expected to be pulled and there is a greater percentage of trees in areas in which it is expected to be pulled. In general, the trees are more evenly distributed in greater numbers.

In Chart 3 the gross acres worked by initial eradication and re-eradication by years for the region are shown. This chart is based on Tables 3 and 3a and similar tables in previous reports. There is also shown the savings on maintenance at the end of 1941.

From Chart 3 it is evident that the least amount of initial eradication was done in 1941 than in any year since 1933. Practically as much savings was reported by re-eradication in 1941 as by initial eradication. The largest amount of re-eradication was performed in 1940 of any of the years since the program started. This is due partially to the lack of availability of trees in certain areas. It became necessary to re-eradicate trees from good pine areas initially worked from five to seven years ago. The chart also shows that the relatively large amount of initial savings covered in the years 1933, 1935, 1936 and 1938. This large savings is chargeable chiefly to the large area given the work through the emergency relief program.

It is also interesting to note in Chart 4 that the savings on maintenance at the end of 1941 is nearly equal to the savings covered by re-eradication at the end of 1941. This does not mean that all of the savings covered by re-eradication can be placed on maintenance but it does mean that a considerable amount can be worked and then placed on maintenance due to the fact that few trees





1941. In taking these figures out of the original census sheets the process was limited under the heading of post-checking.

In Table 5 it will be noted that in the region 166,838 acres of nursery area were examined. Of this total, 50,714 acres were discarded, 100,137 were classified as needing further work and 14,706 acres were put on maintenance.

Table 5 illustrates the mechanism of changing figures on acres initially worked from a gross to a net basis. In this case the gross acreage initially worked was being reduced by 50,714 acres discarded.

### Nursery Sanitation

During 1941, as shown in Table 9, 23 nurseries were checked for weeds. In these protected nurseries were growing approximately 25,000,000 white pines.

To protect the 986 acres of nursery it was necessary to remove 37,407 wild vines and 121 cultivated vines from 9,390 acres of control area. This work cost 451 man-days. That the nursery sanitation program in 1941 was greatly reduced below that of 1940 is evidenced by the fact that in 1940 over three times as many man-days (1,377) were spent on this project than in 1941.

Listed following are the number of nurseries and the number of white pines produced, by ownership:

<u>Ownership</u>	<u>No. of Nurseries</u>	<u>No. of White Pines</u>
U. S. Forest Service - - - - -	6	8,166,000
U. S. Indian Service - - - - -	1	350,000
U. S. Soil Conservation Service - - -	3	6,814,000
State - - - - -	6	7,074,900
County - - - - -	2	195,000
Private - - - - -	11	275,000
Total - - - - -	28	25,694,900

### Cultivated Black Currant Elimination

Initial cultivated black currant elimination work is now completed, particularly in the northern part of the region and in Ohio. It is practically completed in the northeastern third of Iowa. No systematic black currant elimination has been performed in Indiana or Illinois. In Indiana, surveys have shown the cultivated black currant to be quite rare.

In 1941, as shown in Table 10, initial evaluation was performed in 26 counties, 11 of which were in Iowa, 7 in Michigan, 4 in Minnesota, and 4 in Wisconsin. Approximately 55,930 inspections were made and 229 locations containing 1,435 bushes were found. For the region as a whole only 1.1 locations of cultivated black currants were found per 1,000 properties inspected. Thus, approximately 0.4 percent of the properties contained cultivated black currant bushes. These bushes were most numerous in Michigan where 5.7 locations per







## Informational Activities

It is generally recognized that informational activities are a very necessary part of any activity dealing with the general public. A subject such as blister rust is generally not understood except by those especially trained to recognize and understand the life history of the disease. It, therefore, becomes necessary for any control operation to acquaint the people with whom they are working and whom pine they are protecting, with the necessary facts regarding the procedure to follow. Informational activities generally consist of field trips to infection areas to show the public what damage blister rust can actually do. Other forms of informational work consist of newspaper articles which are particularly important in local communities in which cultivated plant work is to be undertaken. Motion pictures offer an excellent opportunity to show a large group what white pine blister rust infection on both pine and ribes looks like and how it can be controlled. The medium of radio also brings to the public information on the work that is being accomplished and progress made. Due to the scarcity of labor at this time it becomes even more important that informational work be expanded so as to reach as many individual pine owners as possible. Much of our manpower has now gone to the armed forces or to defense plants and facilities making it necessary for all pine owners to offer more assistance in controlling blister rust than they have in the past.

The informational work carried on by each state during 1941 is listed as follows:

### Illinois

In Illinois, posters, transparency pictures and blister rust mounts were displayed at the State Fair, International Livestock Show, State Horticultural Convention and Illinois Flower Show, in connection with the State Department of Agriculture exhibits. About 500 copies of a news article were distributed to local newspapers. Several of these same news articles were distributed to individuals who had recently planted white pine.

### Indiana

No work was done in Indiana except the contacts made with agencies and pine owners in connection with local control or pre-eradication survey. Bulletins were distributed and verbal contacts made.

### Iowa

Personal contacts were made with pine and black current owners during the course of regular work. Bulletins were distributed to interested pine and black current owners.

### Michigan

Information on blister rust and its control was brought to the attention of the public by means of newspaper articles, radio talks, addresses and public gatherings, bulletins, window displays and escorted trips to infection areas for the purpose of seeing blister rust in its natural state. Many contacts were also made with pine owners and others during the course of regular work.







## Costs

Table 12 shows expenditures for all blister rust control work in the Milwaukee office during 1941 by funds and by account for salaries and expenses. The total amount spent in the Milwaukee office amounted to \$28,444.60. This represents about 7.9 percent of the total regional expenditures.

Table 12a shows the amount of EPA administrative money spent in the Milwaukee office.

Table 12b shows the total North Central Region expenditures broken down by states and agencies furnishing the funds. It will be noted that the total amount of funds expended in the North Central Region for blister rust control amounted to \$399,192.24. The division of these expenditures is brought out in Chart 7 by states, including the Milwaukee office.

Chart 8 which also shows the total regional expenditures, is based on Omnibus Supplementary Table 4, Sheet 1. In this chart the Milwaukee office costs have been prorated into the various states. From the totals on Chart 8 it will be noted that the largest appropriations were received from emergency relief, which agencies furnished approximately 66.8 percent. Forest Service Regular funds amounted to only 1 percent and Bureau Regular 15 percent. State and private provided 11.6 percent and the Civilian Conservation Corps provided 3.6 percent.

Chart 9 also is based on Omnibus Supplementary Table 4, Sheet 2. In this chart will be found the total expenditure for the North Central Region with Milwaukee costs prorated to individual states. Chart 9 shows a breakdown of regional costs by states and activities. It will be noted that ribes eradication used over half of the total expenditures. Nursery sanitation demanded only 0.6 percent of the total expenditure.

Table 12c shows the total regional expenditure broken down by state and activity with Milwaukee costs listed separately.

Table 12d shows a breakdown of the total regional expenditures into agency performing work and the activities on which funds were spent. Table 12e shows the breakdown of the total regional expenditures by states and the Milwaukee office by salaries and other than salaries. From Table 12e it will be noted that in the region as a whole 66.5 percent of the total expenditures was used for the payment of salaries and wages. This percentage is quite constant for all of the states.

Chart 10 shows the total North Central Region expenditures cumulatively from 1913 to 1941. The total costs over this period are broken down by agency and amounts by agencies. A further breakdown shows by states the percentage of money provided by each agency within the particular state and the amount of money spent by agency within the region as a whole. Again it will be noted that the largest amount of money was provided by the emergency relief agencies.

Chart 11 based on Supplementary Omnibus Table 4a, Sheet 2, shows the total amount of funds spent in the North Central Region by activities and the percentage spent by activities and states. Ribes eradication leads in the total



Amount of money spent, in 1941, for the purpose of carrying out the work of the

Table 12 shows the actual expenditures for the purpose of carrying out the work of the Wisconsin Wildlife Conservation Fund for the calendar year 1941. This table is broken down by state and administrative classification. In comparing the cost of salaries with non-salaries, it will be noted that the average cost per man-month was \$58.52 for salaries and \$5.05 per man-month for non-salaries. Our average cost for the calendar year, including salaries and non-salaries, amounted to \$63.57 per man-month.

Table 12 also shows the allotment of WFA administrative costs by state and appropriations for the calendar year 1941. Administrative expenditures, of course, were assigned primarily to the Milwaukee office. However, it will be noted that in Ohio a small amount was spent for expenses other than salaries. Administrative costs have been used primarily for the payment of office help such as clerks and stenographers in connection with the administration of the WFA program.

Chart 13 shows the total regional expenditures by years from 1935 to 1941 inclusive, by activities. Chart 14 shows the same information as Chart 13 except that the costs are broken down by agencies and years.

#### Number of Man-months Employment

In Tables 15 to 18 inclusive, man-months employment in the region are shown. Table 15 shows the number of individuals employed by months and programs in the Milwaukee office. There was a fairly constant average of 12 individuals employed monthly, 5 of whom were on regular funds, 2 1/2 on WFA administrative funds, 1 on emergency project funds and 1/2 on Forest Service regular funds. The Forest Service inspector worked out of the Forest Service regional office and spent approximately half his time in the field, principally in Wisconsin.

In Table 16 is shown the number of men by activities, agencies and months employed in the region. In Table 17, the man-months are shown by states, activities and months. In Table 18 the Federal Agency-WFA project man-months are shown by position and state.

Man-month figures for the Federal Agency-WFA projects for regular and for emergency, are quite accurate. Figures for the first two categories are particularly accurate because they are based on analysis of payrolls in the Milwaukee office. Man-months shown for the Civilian Conservation Corps and State WFA projects are less accurate because they are based on monthly reports from state leaders submitted and are necessarily estimates. However, since the method of collecting man-month statistics in 1941 was fundamentally the same as in previous years, the data may be significantly compared by years.

Chart 16, based on Table 16, shows the man-months employed in the region by positions and months. From January through April, the employment of labor represented approximately 60 persons and supervisors including clerks, 60 percent, the supervision and clerical, representing about 60 individuals, is quite constant throughout the year. Increased employment of laborers and foremen during the Civil season did not substantially increase supervisory personnel.

The normal field season usually lasts from about May 15 to September 15



In Chart 18 it will be noted that July shows less than half the number employed in June, and slightly more than half the number employed in August. Federal agency projects were relatively approved and put in operation in July. In fact, no one was employed on Federal agency projects in Michigan until the latter half of September, and in 1941 until practically November 1. Since employment of workers was made chiefly on Federal agency project funds, the delay in operation of Federal agency projects materially influenced the number of men employed.

The volume of F.A. employment in relation to other agencies is strikingly brought out in Chart 15. Chart 19, based on Table 15, shows the number of F.A. employees on F.A. projects by months and position classes. The relatively small number of workers in July (137.2) the heart of the eradication season, is in striking contrast to the 502.3 man-months in June, and 418.7 in August. Naturally we would expect a decline of employees of 70 or 80 during the months of January through April and November through December, and a maximum employment of 450 to 500 during the months of May through October.

The same distribution is shown in Chart 19. An average of 426.2 man-months were used monthly from August through December. This is larger than the August employment of 418.7 man-months. Federal agency projects expired by law on December 31, 1941. They were much delayed in starting in July, consequently the employment of men was much greater during the last months of the year than originally planned. Fortunately the fall of 1941 was mild and favorable for an extension of the ribes eradication season into early December. Oak-leaving in Michigan, cultivated black current elimination, postweeding and pre-eradication surveys were among the activities painfully employing men after the protracted eradication season. Due to favorable conditions, work done was efficient, and waste of manpower was kept at a minimum.

The relative number of man-months for all agencies for the year 1941, by states, is shown in Chart 14 based on Table 17. A wide difference in total employment is evident. The large number employed in Michigan is due principally to the greater Federal-agency employment in that state.

In Chart 18 the total man-months employed by years, 1934 to 1941, is shown by agencies. It is interesting to note the abrupt reduction in employment from the peak year of 1936 to 1937. From 1937 to 1941 the reduction has been more gradual, with that of 1941 the smallest of the eight years considered. No total man-months records were kept previous to 1934.

The progress of the Civilian Conservation Corps provided the largest man-month employment during 1934 and 1935. From 1936 to 1940, employment increased steadily. In 1941 employment dropped to less than half of that shown for 1940.

WPA employment increased rapidly from its inception in 1934 through the peak year of 1936, remained fairly constant at a reduced level from 1937 to 1939, and at a still lower level during the war years of 1940 and 1941.

On the other hand, although employment under regular and special funds has been well in comparison with other agencies, it has increased slightly since 1934. Due to increased activity in ribes eradication under the Federal, State, and local funds and regular funds the total in 1941 of the eight years considered.





There were 52 compensation cases reported during the calendar year 1941. Table 19 shows claim peaking again to be the leading cause for loss of time. Minnesota had the largest number of compensation cases, with Wisconsin second high. Table 20 shows the distribution by months and indicates that the largest number of compensative cases appear during the months of heavy employment. There was a total of 9.1 compensation cases per 1,000 man-months of employment during 1941.

#### Automobile Accident Cases

During 1941, there were ten (10) automobile accidents of a kind which in the North Central Region. Four accidents occurred in Minnesota, four in Wisconsin, and two in Ohio. None of the accidents caused any serious damage to the automobiles involved. Neither were there any injuries to occupants. In several cases the driver of the private car was at fault in which event he paid for the damage and the case was considered closed. In others in which an negligence on the part of the driver of the government car was indicated, the requisite necessary were paid for by the government. In one case in which the driver was negligent, the damage to the private car was paid for by the driver. For the large number of automobiles operated, the small number of accidents constitutes a very good record in careful driving by the employees of this Division.

#### Distribution and Repair of Government Equipment

During the winter months we have been faced with the problem of making good use of certain skilled individuals from the relief rolls whom we wish to keep for use during the summer season. These men have proven themselves to be extremely valuable as foremen for local control crews and mapping crews during the summer season. Several Minnesota WPA men have been kept busy during the winter constructing such items as office furniture, benches, display pieces, trailer houses, and for repair and maintenance of automotive equipment. In Wisconsin, two men were assigned to repair government cars and trucks at the Wisconsin Forest Service garage located at Grand Rapids, Minnesota. They have been under the supervision of the State mechanic in charge of the repair shop and have been successful in repairing a large number of trucks and passenger cars. This has saved much money which would otherwise have been spent in maintaining these cars in an economical operating condition.

At the District office in North Branch, Minnesota, the District leader, Mr. Peall, with the assistance of two or three skilled WPA foremen, has during the past year, completed one trailer house and partially completed two others. In addition, they have built several pieces of office furniture and several display units for use in informational work. They also completed one portable fuel oil garage which was set up on land leased from the village of North Branch.

In Wisconsin a portable fuel oil garage purchased after the garage built at North Branch, Minnesota, was started by the FBI at Madison. Quotes and other facts were furnished by the Bureau and information and supervision provided by the FBI.





Studies in Effectiveness of Control, 1941  
by H. A. Jones  
Assoc. Plant Pathologist, Forestry

In general studies concerning Effectiveness of Control undertaken in the North Central Region, 14 in past years. Fall below two main categories:

- (1) Pine Infection Study Plots, including studies of pine infection, Ribes abundance and Ribes infection, and
- (2) Ribes Regeneration Study Plots located in various types of habitat.

As stated in the 1940 Report, from such studies it is hoped to learn (a) the effectiveness of the control measures used, (b) what width of protective zones are most practical under different control methods, (c) how much pine infection may be expected from known amounts of Ribes, (d) the importance of different species of Ribes in relation to pine infection in different types of habitat, and (e) the amount of Ribes regeneration normally to be expected following typical area work. These studies have permitted us to follow the development of blister rust, note the effect of control measures, and have suggested possible procedures which would improve or make more economical such control practices.

The following summary will attempt to give a brief of the results obtained in 1941 concerning (1) Pine Infection, (2) Ribes infection and (3) Ribes Regeneration following Ribes eradication by crews. For further details concerning any study plot refer to the individual reports for each study plot.

Pine Infection

Effectiveness of Control in Preventing Pine Infection after Ribes Eradication

During 1941 considerable time was spent in securing data from small, temporary, sample plots located in pine areas in which Ribes eradication had been performed several years prior. Most of these temporary samples were made in Wisconsin. Samplings of pine infection following Ribes eradication in other states of the region will be attempted at later dates.

The small temporary pine infection study plots were established for the purpose of determining the effectiveness of Ribes eradication on subsequent pine infection and to determine the amount of Ribes regeneration possibly responsible for any pine infection found. It also is hoped that these plots upon which there may be low Ribes density and where pine infection may be developing slowly, may assist in determining the most satisfactory protective zone widths and proper checking standards.

Table II lists 24 pine infection study plots included in this summary. All study plots listed here are in upland white-bark-hardwood timber types (Ribes Type-C).

In Wisconsin the Charvat White-Pine Infection Study Plot is a permanent plot established in 1936. This study plot had two Ribes eradication zones performed in 1938, one in 1939 and a second in 1940. Two other small temporary study plots were established in Wisconsin and also included.



The small temporary study plots as a rule consisted of nine square chains upon which Ribes-abundance was recorded. Pine infection was recorded on the one central square chain in this group. Certain modifications of this arrangement were made depending upon the conditions existing in the particular area. If the main pine trees were rather scattered and it was believed a more representative sample could be obtained, more square chains were included in the area upon which pine infection data were recorded. Thus, on the Jack Lake Plantation Study Plot pine infection was read on the three central square chains, on the John Sweeney Study Plot two square chains were included in the pine block read and twelve square chains in the area read for Ribes abundance. The A. & A. Nelson Study Plot consists of but one square chain for the reading of pine infection and Ribes abundance but no less of time. In the case of the Lewis Pine Infection Study Plot Ribes abundance was read on nine square chains and pine infection on six of them. In the Wagon Flats Pine Infection Study Plot the three central square chains were read for pine infection and in the Great Smith Pine Infection Study Plot 10 square chains were included in the area read for Ribes abundance.

Only one study plot, the Detroit Lakes Pine Infection Study Plot, is included from Becker County, Minnesota. Initial Ribes eradication was performed on this study plot in 1934. Following the recording of pine infection and Ribes abundance data in 1941 a second eradication was performed on this study plot.

Two from two small temporary one-square chain study plots located at Wahakata, Debel County, Michigan, are also included.

Of the 14 study plots shown in Table VI ten show no pine trees becoming seriously infected since the initial Ribes eradication. Two of the ten study plots (John Lake & Detroit Lakes) do show one additional blister rust sucker each on trees originally infected prior to eradication.

Table I gives a comparison of the average number of Ribes per acre found in 1941 on eight study plots upon which no blister rust infection occurred since the initial Ribes eradication and on 10 study plots upon which one or more blister rust suckers have developed since the initial Ribes eradication. From Table I it is interesting to note that the number of Ribes bushes is greater and the average feet of live stem less on the study plots upon which an additional blister rust infection has appeared than upon those in which at least one blister rust sucker had developed. It would appear from this that the size of bush is more important than the number of bushes with respect to the danger Ribes may be to nearby white pine.

Table I - Comparison of Average Ribes per Acre on Plots with and without Blister Rust Infection since Ribes Eradication

Plot	Year Intervening Bl. Rust Infection Began		Avg. Approx. Ribes per Acre, 1941 Data		Average Y.L.S. per Acre
	(b)	(c)	(d)	(e)	
10 Plots No Infection	4-8 yrs.	5.0 yrs.	114.8	218.2	1.0
10 Plots with B. & S. Cankers	8-9 yrs.	8.0 yrs.	47.0	176.8	3.8

An examination of Table II reveals that in the case of eight study plots or 57.3 percent of the total study plots examined within three to nine years after the initial Ribes eradication no further blister rust infection has developed.



in maintaining the progress of varying amounts of regenerated Pines. It would appear that over this period a satisfactory control had been accomplished (See Text Table 2).

Text Table 2. Pine Infection before Initial Eradication.  
Same after, 8 Study Plots, 1941 Data

Study Plot	Examined Trees			Number Cankers	Years Since Initial Eradication
	Total	Number Infected	Percent Infected		
(1)	(2)	(3)	(4)	(5)	(6)
Wayne	241	41	21.3	70	1941
Lapsley	221	8	3.6	1	
Owen Duff	71	1	2.3	1	
John Conway	17	13	12.0	16	
Remick	440	66	15.1	113	
A. and A. Nelson	97	23	23.8	16	
Elyse H. Bates	209	12	5.7	147	
David J. Glavin	37	51	35.4	12	
Total - 8 Plots	1084	255	23.5	479	

The amount of blister rust infection appearing before and after the initial Ribes eradication on sixteen or 88.7 percent of the study plots examined in 1941 is given in Text Table 2. A total of 3,553 trees were examined of which 705 trees or 19.8 percent had been infected by blister rust. Of the 705 infected trees only 40 trees or 5.7 percent had become infected after the initial Ribes eradication. These 40 trees represent only 0.7 percent of the total trees examined.

On the 705 infected white pine trees, 1,062 cankers were reported of which 62 or 5.8 percent probably originated after the initial Ribes eradication. Two of these 62 cankers occurred on trees infected prior to the initial Ribes eradication. (See Text Table 3.)

Text Table 4 combines the totals for the 14 study plots examined in 1941. A grand total of 5,508 white pine trees were examined on a total of 4.8 acres. Of these examined trees 855 or 15.5 percent were found infected. Of the 855 infected white pine 40 or 4.7 percent have become infected since initial Ribes eradication. Thus, 0.8 percent of the grand total examined trees have become infected after the initial Ribes eradication. A grand total of 1,539 blister rust cankers were recorded of which only 62 or 4.0 percent had appeared after the initial Ribes eradication. From these tables it appears that relatively only a trace of blister rust has originated after the initial Ribes eradication and that while an absolute control has not been obtained in these cases, nevertheless, a practical control for blister pine under forest conditions has resulted.

All Ribes species were found on or within several chains length of the John Fladten Study Plot and it would appear that in this case infection must have resulted from a possible stray influx of inoculum from some outside source under conditions very favorable to infection. (See Text Table 4).









The Initial Sales proceedings on Exemption, do. No. 14 in Chippewa County, Wisconsin, was performed between May 21-22, 1900, by H.H.H. Baker. For some reason the white pine included in the west side of this area was not protected. The protected pine was located on the farm of Mr. Oliver J. Simbel. The unprotected pine was partly on the farm of Mr. Simbel and partly in an adjacent portion of the Park of Mr. Edward Elias. The legal description for this location is Chippewa County is T. 50N., R. 9W., Section 12 and it borders the north side of U. S. Highway 51. Both Mr. Elias and Mr. Simbel are ex ex H.P.D. from Bloomer, Wisconsin.

Between November 17 and 24, 1941, three well pine infection study plots were established for the purpose of determining the effectiveness of X-ray irradiation in the control of blister rust as provided in the North Central Region and is currently protected and monitored pine areas.

Table II gives a comparison of white pine infection according to the year's growth at the center of the stand, which is commonly accepted as the probable year the insect was introduced, on the two pine infection study plots established in Chippewa County, Wisconsin, in 1941. From this table it is evident that no trees became infected since introduction at the preferred time as represented by the Sugar J. Mitchell Study Plot No. II, whereas, on the adjacent unprotected tract represented by the Edward Elias Study Plot white pine infection continued to intensify and it broke on two-thirds of the total affected trees, and 8.7 percent of retained white birches infected after 1945. Part Table 3 gives a complete summary of all white pine trees on the two Chippewa County pine infection study plots.



Table 25 gives a comparison of blister rust cankers appearing on white pine on the two study plots established in Chippewa County, Wisconsin. A minimum of one canker has been allowed for each tree killed by blister rust prior to the establishment of the study plots and since the year's growth at the center of the canker could not be estimated these cankers, as were the killed trees, are listed as "undetermined." It is probable that all, or at least most, of these undetermined cankers were initiated prior to 1935 and for that reason they have been so intercalated in the above tables.

On the protected area no blister rust cankers have appeared since the initial Ribes eradication at which time an estimated total of 77 cankers on 37 affected trees has been arrived at. On the unprotected area represented by the Edward Elias Study Plot blister rust cankers continued to intensify after 1935. In fact two-thirds of the total cankers are recorded as initiated on the 1935 to 1936 pine growth. A total of 27 cankers on 24 trees have appeared since 1935 of which 18 cankers have appeared since blister rust infection ceased on the adjacent protected pine area. As was noted with respect to trees initially becoming infected so also blister rust cankers on the intermediate Bishop Study Plot No. II have not appeared since 1935.

The amount of Ribes occurring on the two study plots is given in Text Table 6. A total of 15,660 bushes of all Ribes species were reported pulled on 102 acres of upland at the initial Ribes eradication in May, 1935. This represents an average of 153.5 bushes per acre for the Bishop Study Plot No. II. In November, 1941, at the time of establishing the study plots no Ribes could be found on the protected area of the Oscar J. Bishop Study Plot No. II. Apparently there had been a very thorough initial Ribes eradication in 1935 and any possible regeneration from seeds or sprouts that may have existed would be greatly suppressed by the heavy overstory in the area.

On the unprotected area an average of 88 bushes with 361.5 feet of invasion per acre was estimated on the Edward Elias Study Plot.

Text Table 6. Comparison of Amounts of Ribes on Protected and Unprotected Pine Areas in Chippewa County, Wisconsin, 1935-1941

Name of Study Plot	Area Acres	Ribes Present 1935		Average Ribes per Acre		
		Bushes	F.L.S.	Total at Inst. Nov. 1941	Found 1941	F.L.S.
(a)	(b)	(c)	(d)	(e)	(f)	(g)
Oscar J. Bishop II	0.9	Pine Protected (1941)		153.5	0	0.0
Edward Elias	1.7	Pine Unprotected		-	88.0	361.5

Text Table 7 gives a brief summary comparing the tree, canker, and Ribes situation on the protected and unprotected study plots in Chippewa County, Wisconsin.





## 2. Delta County, Michigan Study Plots

In the spring of 1941 Mr. Spar M. Sager reported to Mr. E. N. Putman a marked contrast in the amount of pine infection occurring in an area near the city of Escanaba, Delta County, Michigan. At one end of this area an initial ribes eradication had been performed in July 1933 and a second ribes eradication in June 1936. In May of 1941 the entire area was given a ribes eradication by WTA crews.

On September 21, 1941 Messrs. E. N. Putman, S. M. Sager, and E. E. Doney took one-square-chain samplings of pine infection and ribes abundance in the protected pine and unprotected pine portions of this area. The one-square chain study plot with protected pine has been designated the Escanaba City Pine Infection Study Plot and that with unprotected pine as the Escanaba Airport Area Pine Infection Study Plot. Table 34 gives a comparison of trees initially becoming infected with blister rust according to the year's growth at the center of each sample for the two Delta County, Michigan Study Plots. From this table it appears that the initial ribes eradication performed in 1933 and the second ribes eradication in 1936 on the Escanaba City Pine Area did not completely eliminate blister rust infection of white pine. Three trees became initially infected following the first ribes eradication and two additional trees following the second ribes eradication. Such infection might have resulted from infiltration of blister rust inoculum from adjacent areas where ribes eradication had not been performed although as may be noted in Text Table 3 a certain amount of ribes was present even after the third ribes eradication in May, 1941. However, the amount of pine infection is significantly lower on the protected area as compared with the unprotected area.

On the unprotected Escanaba Airport Area Pine Infection Study Plot a total of 34 trees or 35.8 percent of the sampled pine have become initially infected with blister rust prior to the initial ribes eradication in May, 1941. This amount is a difference in the number of trees infected on the unprotected and protected areas of 35.8 percent. Text Table 3 gives a complete summary of all white pine trees on the two Delta County pine infection study plots.

Text Table 3. Comparison of Total Pine Occurring on Escanaba City Pine and Airport Area Study Plots, 1941 Data

Tree Categories (a)	Total Sampled Pine on Study Plots			
	City Pine (Protected Pine)		Airport Area (Unprotected Pine)	
	Number	Percent	Number	Percent
Living Trees with "1st-Stage" Damage	3	7.6	27	31.8
Living Trees with "Dead" Canopies only	0	0.0	4	4.7
Total Living Trees with B. P. Canopies	3	7.6	31	36.5
Trees Killed by Blister Rust	0	0.0	2	2.3
Total Trees Affected with Blister Rust	3	7.6	33	38.8
Total Dead - Other Causes	1	2.3	3	3.5
Total - Other Causes	1	2.3	3	3.5
Total Sampled Trees	37	100	92	100
Ratio of Initial Pine Infection	12.7	34.3	36.5	39.7
Ratio of Total Pine Infection	8.1	21.6	38.8	42.2
Ratio of Total Pine Infection	100	100	100	100



Table 10 gives a comparison of blister rust cankers appearing on white pine in the two Delta County Study Plots. As in the case of Chippewa County, a witness of new cankers has been witnessed for white trees killed by blister rust prior to the establishment of the study plots and these are listed as "undetermined" because it was not possible to estimate the year's growth at the center of the cankers.

On the Escanaba City protected pine area a total of only eight cankers developed on the five trees heavily infected following the initial ribbed protection. No blister rust cankers appeared after the first year post-protectant infection. On the Escanaba Airport area which was unprotected, a total of 68 cankers developed, all but three of which, appeared on trees grown after 1936. As in the case of pine trees initially becoming infected, canker multiplication rate was considerably greater on the unprotected pine plots.

The amount of ribes found and the average per acre on the two study plots is given in Text Table 2. In September 1941, following the first eradication of May, 1941, three bushes of *R. kirtellii* with 2-3 F.L.S. were found on the previously protected City Pine area. This is an average of 30 bushes with 33.0 F.L.S. per acre. On the unprotected area eight bushes with 4.2 F.L.S. were found and this is an average of 80 bushes with 41.0 F.L.S. per acre. Thus on the area unprotected until May 1941 there was an average of 50 times more ribes bushes and 1.2 times more feet of live-ribs per acre.

Text Table 2. Comparison of Amounts of Ribes on Protected and Unprotected Pine Areas in Delta County, Michigan, 1941 Data

Type of Study Plot	Area in Acres	Ribes Present 1941		Average Ribes per Acre		
		Number Bushes	F.L.S.	No. Ribes Found at Initial Destruction	Number Bushes	F.L.S.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>Pine Protected 1931-1936</u>						
City Plot	2.1	3	2.8	estimates	30	33.0
<u>Pine Unprotected</u>						
Airport Area	0.1	8	4.2	24 (1936)	80	41.0

Text Table 10 gives a brief summary comparing the trees, cankers and ribes situation on both of these study plots in Delta County, Wisconsin.





## Blister Rust Canker Studies

### Annual Measurement of Canker

On the Pittsfield Pine Infection Study Plot established in 1937 in Brown County, Wisconsin, it has been customary to make measurements of cankers at each reading of pi infection. Since in some cases the affected host organ was killed beyond the canker, ("flag"), growth in that direction was impossible. Therefore, in this study of annual growth, extension of the canker is assumed to be the growth in one direction only, viz., downward to the host organ (twig, branch, or trunk). In cases where "flags" are not present on the affected host organ we have arbitrarily assumed that the growth up and down from the center of the canker is equal and have used one-half of the total increase in canker extension for the time under consideration as equal to the growth downward. A total of 280 cankers read in 1941 has been included in the following fact table in which the total longitudinal growth of cankers in inches downward is charted against the diameter of the host organ. Only active "living" blister rust cankers where the total growth occurred entirely on one twig, branch or trunk and thus not complicated by the passing from one side of susceptible organ to another (twig-branch or branch-trunk) have been selected for this purpose.

Only one blister rust canker was included in the age class of probably one year after infection and the total growth downward was 0.2 inch; 27 cankers in the two year class had an average total growth downward of 1.0 inches; 34 cankers in the three-year class had an average total growth downward of 1.3 inches; 44 cankers in the four-year class had an average total growth downward of 1.6 inches; three cankers in the six-year class had an average total growth downward of 1.8 inches; seven cankers in the seven-year class had an average total growth downward of 1.8 inches; and for cankers in the eight-year class had an average total growth downward of 1.8 inches. By subtracting the average total growth of each year from the next older average total year's growth an average annual growth downward between the years involved may be obtained. Thus, the average annual growth downward for one year old cankers is 0.2 inch, for two year old cankers 1.0 inches, for three year old cankers 0.3 inch, for four year old cankers 1.0 inch, for five year old cankers 0.9 inch, for six year old cankers 1.2 inches, for seven year old cankers 1.5 inches, and for eight year old cankers 1.4 inches. The annual growth appears to increase with the age of the cankers from approximately 0.2 inch in one year to about an inch between 2-8 years and an inch and a half between 6-8 years inclusive.





In the Winfield Pine Infection Study Plot in Green County, Wisconsin, all blister rust cankers on affected pines are given a number and labeled at the first inspection made after they become visible. It was stated a first infection record has been made of all old and any new incoming blister rust cankers. The tagging of the individual cankers on each tree gives an opportunity to determine the lagged time between the appearance of the year's growth and the year the blister rust canker becomes visible. Inspections of all trees in this study plot were made during the years 1927, 1928, 1929 and 1931. In 1930 approximately 500 were present at inspection the taking of pine infection data.

Very commonly it is assumed that the year's growth at the center of the canker first infected is the most probable year of initial infection. This is not strictly true for it is commonly found that the performance of an initial ribbed eradication is a white pine tree in which blister is intensifying rapidly will affect the number of cankers appearing in several years growth preceding the year of ribbed eradication. Infection of any year's growth might take place one or even two years after that in which the year's growth developed and, therefore, it is more accurate to state that the information obtained gives the number of years lagging between the appearance of the year's growth or infection and the year of appearance of the canker rather than the year of initial infection and the appearance of the canker. Also, it is probable that the figures given in Test Table 12 should be increased about one additional year since the reading during the year that the study plot was established was early in the season, whereas, all other readings were taken late in the fall after growth actively was slower diminished or dormant.

If we consider the number of cankers present at the 1930 reading as 207 cankers, Test Table 12 gives the percentage capable of being recognized the preceding year, viz., 1927. We note that 40 percent of the cankers on 1924 growth were visible, 80.0 percent of the cankers on 1925 growth, 27.4 percent of the cankers on 1926 growth, 88.2 percent of the cankers on 1927 growth, 100 percent of the cankers on 1928 growth and 75.0 percent of the cankers on 1929 growth. It may be that one canker representing 25 percent of the cankers on 1929 growth was overlooked rather than not visible, in which case it would appear that by 1927 all or 100 percent of the blister rust cankers were visible on 1925 or older growth.

Test Table 12. Percentages of S. R. Cankers Recognized One Year Prior to the 1930 Reading of Pine Infection

Tree's Growth at Canker Center	Number of S. R. Cankers Recorded at Reading for		Percentage Found in 1927	Number Trees Prior to 1927 Reading
	1927	1928		
1927	(1)	(0)	(A)	(0)
1928	1	3	33.3	3
1929	3	6	33.3	3
1930	41	46	47.9	4
1931	18	27	66.7	4
1932	0	0	0.0	3
1933	3	4	75.0	3
			66.7	



Similarly the number of blister rust cankers recognized in 1937 and 1938 compared with those found two years later at the 1939 reading. From Test Table 13 it may be seen that only 50 percent of the cankers appearing on 1935 growth were recognized in 1937, 37.5 percent on 1936 growth, 75.2 percent on 1934 growth, 71.4 percent on 1933 growth, 100 percent on 1932 growth and 75.0 percent on 1931 growth. Thus, it is evident that 16 additional cankers or 16.5 percent were cankers on these same year's growth was evident in 1939 over those visible one year earlier in 1938.

Test Table 13. Percentage of B. R. Cankers Recognized Two Years Prior to 1939 Reading of Pine Infection

Year's Growth at Canker Center	Number of B. R. Cankers Recorded at Reading in:		Percentage Found in 1937	Number Year's Prior to 1939 Reading
	1937	1939		
(a)	(b)	(c)	(d)	(e)
1935	2	3	33.3	1
1936	3	8	37.5	2
1934	42	53	79.2	2
1933	18	21	71.4	4
1932	0	0	100.0	0
1931	5	4	75.0	0
Total, or Average	68	70	70.3	-

The same comparison may be made again after four years as given in Test Table 14. In the 1941 reading an additional 52 blister rust cankers or 45.0 percent were present on the year's growth read found infected at the 1937 reading. From this it is evident that only 8.7 percent of the blister rust cankers on 1935 growth were recognized in 1937, 35.1 percent on 1936 growth, 75.2 percent on 1934, 80.0 percent on 1933 growth, none on 1932 growth and 75 percent on 1931 growth. It explained earlier it is probable that one canker on 1931 growth and the one canker on 1932 growth had been visible but overlooked in which case we could assume that in 1937 100 percent of 1932 and 1931 blister rust cankers could be recognized.

Test Table 14. Percentage of B. R. Cankers Recognized Four Years Prior to 1941 Reading of Pine Infection

Year's Growth at Canker Center	Number of B. R. Cankers Recorded at Reading in:		Percentage Found in 1937	Number Year's Prior to 1937 Reading
	1937	1941		
(a)	(b)	(c)	(d)	(e)
1935	1	18	8.7	1
1936	3	13	35.1	0
1934	42	53	79.2	2
1933	18	28	80.0	4
1932	0	1	0.0	0
1931	5	4	75.0	0
Total, or Average	68	120	55.2	-



From the above last table it appears evident that the personal factor is in part responsible for a delay in recognizing a certain percentage of cankers as developing the year's growth upon which initial infection took place. The length of time between readings, the time of season the reading is made, weather at time of reading, the location of the individual canker on the main or intermediate portion of the year's growth, the length of time needles are retained especially following initial infection on the needles, age of the canker when first observed, vigor of the suspect, and other conditions enter into the accuracy of the data. Notwithstanding the fact that such data are subject to a certain amount of error from various sources it is enlightening to obtain average figures giving approximate percentages of total cankers that may be expected to be observed on any year's growth at different yearly intervals.

If we make the assumption that at the 1941 reading all or 100 percent of the blister rust cankers that will appear on the year's growth developed prior to 1937 have already become visible and have been recognized and recorded, we may eliminate the percentage of cankers recognized for each of these year's growth and then determine the arithmetical average percent for each. Text Table 16 gives such a table based on the Pittsfield Study Plot data recorded at the 1937, 1938, 1939 and 1941 readings. From this Text Table only 6.7 percent of the total blister rust cankers initiated one year prior may be visible or recognized, 13.3 percent two years prior, 23.1 percent three years prior, 34.1 percent four years prior, 42.8 percent five years prior and 51.4 percent seven years or more prior to the reading. From these data, therefore, we may conclude that 100 percent of the blister rust cankers initiated on any year's growth will not become visible or recognized until at least the seventh year following the appearance of that year's growth. It is the common belief that all the cankers on a year's growth should be recognized after a period of three or four years but according to the above data there appears to be a lag of at least seven years between the appearance of any year's growth and the probable or approximate year of infection and the year it may become visible. This material is shown graphically in Chart 21.

Text Table 16. Percentages of Cankers Found at Increasing Years Elapsing Between Appearance of Year's Growth at Canker Center and of Examination

Years Elapsed Between Appearance of Year's Growth at Canker Center and Year of Examination	Percentages Based on Number of Cankers on Year's Growth for:						Average Percent
	1938	1939	1938	1939	1938	1939	
	(b)	(c)	(d)	(e)	(f)	(g)	
1	6.7	-	-	-	-	-	6.7
2	13.3	23.1	-	-	-	-	13.3
3	31.3	30.3	72.4	-	-	-	30.1
4	-	51.5	42.8	85.0	-	-	46.1
5	100.0	-	51.4	85.0	-	-	51.5
6	-	100.0	-	84.0	-	75.0	84.0
7	-	-	100.0	-	-	100.0	100.0
8	-	-	-	100.0	-	100.0	100.0
9	-	-	-	-	-	-	-
10	-	-	-	-	-	100.0	100.0

One canker first reported in 1941 on 1933 growth of tree number 23, canker number 3 was definitely an overlooked canker and is not included in this table.



## 20441 Infection Timing

Since the summer of 1938 periodic examinations of different species of Ribes, especially in the States of Michigan, Wisconsin and Minnesota have been made to secure data relative to the seasonal development of blister rust infection and defoliation. Selected Ribes bushes in complete shade, partial shade or with no shade were labeled and examined as often as opportunity permitted, if possible, at least once a month during the growing season. The size of bush, number of leaves present, the number of infected percent of leaf surface infected, and percent of infected surface bearing pustules, telia and necrotic areas were recorded either for the entire bush if small or for a selected marked branch.

### Purpose of Ribes Infection Studies

The purposes for obtaining such data were:

- (1) To observe more closely the initial infection, the critical periods of spore production and the history of the seasonal progress of Ribes infection within the North Central Region.
- (2) To supplement the pine infection records with Ribes infection data for the purpose of having a more complete history of blister rust development on certain pine infection study plots.
- (3) To assist in interpreting the colonization, the interruption of the cessation of pine infection on certain study plots.
- (4) To record the periods of production of different blister rust spore stages and necrosis during the season and their relation to pine infection.
- (5) To correlate Ribes infection with pine infection on certain plots.
- (6) To compare different species of Ribes with respect to susceptibility to blister rust.
- (7) To compare different species of Ribes with respect to their potential danger to white pine.

### Pine Under Observation

During 1941 Ribes infection data were taken on about 16 named blister rust infection areas within Michigan, Wisconsin, Minnesota, and Ohio. Table 10 gives a list of these areas, the number of bushes under observation, and the number of inspections.







### Procedure Used in Calculation of Ribes Infection Data

The procedure used in calculating the 1941 Ribes infection data has been described in the annual report on Studies in Effectiveness of Control Measures, the North Central Region, for 1940 (See pp 62-64), and differs slightly from that described in the similar annual report for 1938 (See pp 32-34). The 1941 Ribes infection data has been calculated and the average for the entire number of bushes in each location at each date of reading is used in preparing the summary tables of Ribes infection for each State. (See Table 26)

In these tables the Ribes infection summary is arranged chronologically according to Ribes species for each state. In reading down the table for any one Ribes species one may see the amount or character of blister rust infection on Ribes during the season (seasonal progress) on either primary or secondary foliage for the state. Also by selecting any particular study plot listed and reading the summaries for this plot only the seasonal progress on any particular plot or location may be ascertained. It may also be noted in this table (Table 26) that Ribes infection was recorded in three degrees of shade, viz., (1) full shade, (2) partial shade, or approximately half shade and, (3) no shade or in the open. In some locations as on the Garfield Pine Infection Study Plot (Wisconsin) Ribes bushes of at least one species were recorded for all three degrees of shade. In other locations records were made only for one or two degrees of shade, depending upon the conditions existing on the particular location.

### The Potential Damage Power of Wild Ribes on the Detroit Lakes Pine Infection Study Plot

#### Relative Amounts of Blister Rust Present on Ribes Species

Ribes infection data has been recorded on certain of the pine infection study plots for about four years. On some of these study plots several species of Ribes are present so that comparative studies are possible. Since it is not feasible to give the details regarding Ribes infection, defoliation and potential influence of Ribes on pine infection for all study plots the following discussion will deal solely with data obtained on the Detroit Lakes Pine Infection Study Plot, located in Becker County, Minnesota.

At the outset it should be emphasized that these data apply only to areas on which pine infection is already well established, such as on the Detroit Lakes Plot.

Text Table 16a gives a summary of blister rust infection and defoliation of the primary foliage of four species of Ribes, viz., R. cynosbati, R. hirtellum, R. triste, and R. americanum obtained at periodic readings in the years 1938 to 1941 inclusive. All bushes were located in partial shade except those of R. americanum, which had no shade. The figures presented in Text Table 16a form the basis for arriving at a "damaging factor" for each species at the time of the various readings. It appears that at different times of the year there is a considerable difference in the damaging power of species of Ribes and this damaging power is distinct from the relative susceptibility to blister rust.



to arrive at the relative amounts of blister rust infection on a species of Ribes multiply the average percentage of leaves present (See Text Table 16a column b) with the average percentage of leaf surface 100 percent infected (Text Table 16a column c) for each species of Ribes at the dates of reading. The ratios are secured by dividing the lowest of the above products into the higher products obtained for the other species on the same date. Text Table 17 gives the amounts of blister rust present on four species of Ribes on the Detroit Lakes Pine Infection study plot for four years. From Text Table 17 we note a significant change in status relative to the amount of blister rust infection between the earlier and later readings for each year. For example R. cynosbati had the greatest amount of blister rust infection on August 4, 1938 had the least amount at the September 20, 1938 reading. Also by September 20 R. triata had the greatest average amount of infection per unit of foliage, viz., 3.1 times that of R. cynosbati and R. hirtellus had 2.1 times that of R. cynosbati.

Such a ranking of relative amounts of blister rust present does not properly express relative susceptibility of these Ribes species. R. cynosbati apparently was so susceptible that it was unable to hold its foliage to the same degree as the other species and the defoliated leaves were no doubt more heavily infected than those on R. hirtellus and R. triata. It is probable that, in this case, susceptibility to blister rust was largely responsible for the difference in amount of foliage retained by these three Ribes species and that R. cynosbati was really much more susceptible than the above ranking of blister rust infection present would indicate. Because of its greater susceptibility resulting in greater defoliation which thereby decreased the source of inoculum, R. cynosbati became relatively less dangerous with respect to pine infection than the less susceptible species of Ribes.



DATA Table 16 - Summary of Blister Bug Infestation on Primary Foliage of Plant Species at Sites on San Antonio Lake from Infestation Area 11, Section 10, Township 11N, Range 10E, T11N, R10E, S10E

Date (a)	Average Percentage of Leaves Present (b)	Average Number of Leaves Infested at Time of Inspection (c)	Average Percent of Infested Surfaces Showing	
			Vegetative (d)	Floral (e)
1978				
August 14	97.4	15.57	12.5	22.9
Sept. 20	15.4	2.16	53.4	33.3
August 14	100.0	34.30	10.0	10.0
Sept. 20	10.4	2.00	73.9	21.7
August 14	98.3	9.37	22.5	27.5
Sept. 20	14.9	34.20	74.5	21.8
August 14	90.0	7.03	5.0	3.5
Sept. 20	12.9	0.16	95.5	0.0
1979				
June 16	100.0	0.30	0.0	9.9
August 9	39.4	11.10	94.7	28.1
June 16	100.0	0.05	0.0	0.0
August 9	15.3	6.80	11.9	5.0
June 16	100.0	11.00	0.0	14.0
August 9	74.3	0.10	17.9	14.0
June 16	100.0	0.00	0.0	0.0
August 9	50.9	0.00	0.0	0.0
1980				
June 26	92.5	3.05	0.0	13.0
July 16	57.3	11.50	0.7	19.6
August 20	17.7	28.57	97.0	52.0
June 26	94.9	0.15	0.0	0.0
July 16	81.7	13.10	0.5	0.5
August 20	86.7	61.66	14.2	1.3
June 26	92.7	0.05	0.0	23.7
July 16	76.3	0.25	0.0	33.3
August 20	29.0	1.60	7.5	39.0
1981				
July 10	70.7	27.51	9.2	20.0
Sept. 9	6.3	2.62	11.0	54.0
July 10	82.1	20.81	2.5	17.9
Sept. 9	1.9	103.00	12.5	17.9
July 10	99.0	1.39	0.0	33.7
Sept. 9	97.9	1.23	13.9	35.0
July 10	89.8	11.75	3.3	20.0
Sept. 9	13.1	8.32	40.0	15.0



Table 17 - Relative amounts of Blister Beet Present on Four Species of  
 Alder on the Detroit Lake Pine Infection Study Plot,  
 Becker County, Minnesota for four years

Rank	Alder Species	Blister Beet Infestation Present			% Total Present
		Amount	Ratio in Partial Shade	Ratio of all Species	
(1)	(2)	(3)	(4)	(5)	(6)
On August 4, 1938					
1	<i>A. cynosueta</i>	13.70	2.3 X	153.7 X	42.5
2	<i>E. trilinea</i>	9.21	1.7 X	107.0 X	22.5
3	<i>E. viridulum</i>	5.90	1.0 X	105.0 X	10.0
4	<i>E. americanum</i>	0.05	-	1.0 X	5.0
On September 25, 1938					
1	<i>A. trilinea</i>	13.95	2.3 X	193.7 X	71.3
2	<i>E. viridulum</i>	0.81	2.1 X	5.9 X	73.3
3	<i>E. cynosueta</i>	0.39	1.0 X	5.6 X	53.6
4	<i>E. americanum</i>	0.07	-	1.0 X	93.3
On June 16, 1939					
1	<i>E. cynosueta</i>	0.500	5.0 X	100.0 X	0.0
2	<i>A. trilinea</i>	0.060	1.2 X	30.0 X	0.0
3	<i>E. viridulum</i>	0.050	1.0 X	25.0 X	0.0
4	<i>E. americanum</i>	0.002	-	1.0 X	0.0
On August 9, 1939					
1	<i>A. cynosueta</i>	5.555	41.0 X	1111.0 X	54.0
2	<i>E. viridulum</i>	5.157	37.8 X	1035.4 X	41.7
3	<i>E. trilinea</i>	0.139	1.0 X	27.0 X	37.5
4	<i>E. americanum</i>	0.005	-	1.0 X	0.0
On June 25, 1940					
1	<i>E. viridulum</i>	0.95	29.0 X	-	0.0
2	<i>E. cynosueta</i>	0.14	2.6 X	-	0.0
3	<i>E. trilinea</i>	0.05	1.0 X	-	0.0
On July 16, 1940					
1	<i>E. viridulum</i>	10.70	61.1 X	-	0.5
2	<i>E. cynosueta</i>	9.76	53.8 X	-	0.7
3	<i>E. trilinea</i>	0.13	1.0 X	-	0.0
On August 26, 1940					
1	<i>E. viridulum</i>	16.26	27.3 X	-	46.2
2	<i>E. cynosueta</i>	5.06	3.3 X	-	39.0
3	<i>E. trilinea</i>	1.34	1.0 X	-	7.5
On July 10, 1941					
1	<i>E. cynosueta</i>	19.05	12.1 X	22.5 X	9.2
2	<i>E. viridulum</i>	17.09	12.4 X	25.1 X	2.5
3	<i>E. trilinea</i>	1.30	1.0 X	2.0 X	0.0
4	<i>E. americanum</i>	0.68	-	1.0 X	3.3
On September 9, 1941					
1	<i>E. americanum</i>	1.00	-	5.9 X	90.0
2	<i>E. viridulum</i>	0.76	4.5 X	4.5 X	42.5
3	<i>E. trilinea</i>	0.49	2.9 X	2.9 X	48.3
4	<i>E. cynosueta</i>	0.17	1.0 X	1.0 X	10.0

### The Potential Damage Factor per Unit of Foliage for Each Species of Ribes

Above we have multiplied the average percentage of leaves present by the average percentage of leaf surface 100 percent infected to obtain the relative amounts of blister rust present for each species at the time of inspection. By multiplying this product with the average percentage of telia present (given in Text Table 16a column e or Text Table 17 column f) we obtain what may be designated as the "potential damage factor" for each species since the telia represent the possible source of inoculum capable of infecting white pine. This artificial "potential damage factor" permits a comparison of the different species of Ribes at different dates with respect to the relative possible damage to white pine that may result from equal amounts of foliage. The results of such an artificial procedure arranged chronologically by monthly dates regardless of the year of inspection in order to bring out the seasonal development is given in Text Table 18. In the following text table, is given the ratio of the potential danger of each species of Ribes at each inspection obtained by dividing the smallest "potential danger factor" into that of the other species.

From this table we note that none of the four species were found dangerous to white pine at the June 16, (1939) or the June 26, (1940) reading. However by July 10, (1941) telia had been formed and R. cynosbati was potentially 11.8 times and R. hirtellum potentially 9.1 times more dangerous than R. triste because of their relative amounts of telia and potential sporidial production. R. americanum presented very little possible source of inoculum for pine infection and therefore has been designated as only a trace throughout the season.

The ranking with respect to potential danger to white pine remains the same until August 20 when R. hirtellum becomes potentially more dangerous to white pine than R. cynosbati. By September 9, (1941) and September 20, (1938) R. triste was far more dangerous than either R. hirtellum or R. cynosbati per equal unit of foliage. This material is shown graphically in Chart 22.





The Potential Damage Factor For Species of Ribes within any particular Area

At least two factors tend to alter the relative potential danger from different species of Ribes in areas such as the Detroit Lakes Pine Infection Study Plot in which several species are associated. These two modifying factors, which vary within each individual locality, are (1) the proportional abundance of each species present within the area, and (2) the relative size of bush of each species of Ribes.

According to Text Table 19 on the entire area of 17.6 acres of the Detroit Lakes Pine Infection Study Plot 86.7 percent of the bushes with 92.55 percent of the feet of live-stem are R. cynosbati, 7.7 percent of the bushes with 2.97 percent of the feet of live-stem are R. triste, 4.6 percent of the bushes with 2.31 percent of the feet of live-stem are R. hirtellum and 0.5 percent of the bushes with 2.03 percent of the feet of live-stem are R. americanum. Since in this area R. cynosbati composed the great majority of the bushes and feet of live-stem, it becomes potentially the most dangerous even if the above ranking show that for equal number of primary foliage R. triste is the more dangerous late in the season. If environmental conditions on this plot should favor blister rust infection to the extent that there would be complete defoliation of R. cynosbati such susceptibility would render R. cynosbati less dangerous or relatively innocuous to white pine, or, if R. triste were in the majority with respect to number of bushes and feet of live stem it would become the more dangerous to white pine, provided it carried such a percentage of blister rust infection with viable teliospores.

Text Table 19 - Amount and Percentages of Ribes by Species on the Entire Detroit Lakes Pine Infection Study Plot,\* 1941 Data.

Ribes Species	Amount of Ribes				Percentage of Ribes		
	Number Bushes	F.L.S.	Seedlings	Average Size of Bush in Feet	Number Bushes	F.L.S.	Seedlings
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
<u>R. cynosbati</u>	2006	13,878.1	224	6.9	86.7	92.55	83.8
<u>R. triste</u>	179	644.6	15	2.5	7.7	2.97	4.3
<u>R. hirtellum</u>	108	346.9	6	3.2	4.6	2.31	1.7
<u>R. americanum</u>	11	305.0	106	27.7	0.5	2.03	30.2
<u>R. glandulosum</u>	7	9.0	0	1.3	0.3	0.06	0.0
<u>R. lacustre</u>	4	12.0	0	3.0	0.2	0.06	0.0
<b>Totals</b>	<b>2315</b>	<b>14,995.6</b>	<b>351</b>	<b>6.5</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

\* This included Ribes on the Entire Study Plot of 176 square chains or 17.6 acres.





We might arrive at a modified "potential damage factor" for each species of Ribes within the Detroit Lakes area by multiplying the "potential damage factors" given in Test Table 18 by the percentage of feet of live-stem of each species found present within the study plot area. Such products would more nearly represent the relative damaging effect of the amount of each species of Ribes for this particular area. Test Table 20 gives such modified potential Damage Factors and ratio of potential danger for the four species of Ribes on the Detroit Lakes Study Plot according to 1941 data.

The relative size of bush of the different species of Ribes might modify the ranking of the Ribes with respect to their potential damaging effect upon white pine. However, the influence of the size of bush in this respect is complicated by various factors. Greater amounts of feet of live-stem may not mean a similar proportion of units of primary foliage although the trend is in that direction and for our purpose such proportions may be assumed. The habit of growth also appears to influence the spread of inoculum from the bush to white pines for apparently the more erect and taller bushes are more favorable for spore dissemination.

Test Table 19 column (a) shows that in the Detroit Lakes Area R. americanum had by far the greatest average sized bush with 27.7 feet of live-stem, R. cynosbati was second with 6.9 feet, R. hirtellum third with 3.2 feet and R. triste was fourth with 2.5 feet of live-stem. Since R. triste has the smallest average sized bush it is used as the unit of comparison. On this basis R. hirtellum is 1.3 times the size of R. triste, R. cynosbati is 6.9 times and R. americanum is 11.1 times that of R. triste. We may assume for the purposes of this report that this roughly represents the relative amounts of foliage for each species and that these relative sizes of bush support the relative number of bushes in determining the ultimate possible influence of each species of Ribes on blister rust infection on white pine in this area. In this report, therefore, an attempt is made to modify the "potential danger factor" of Ribes to any greater extent.

Test Table 21 - Ratio of Average Feet of Live-Stem per Ribes Species,  
1941 Data

Rank	Ribes Species	Average F.L.S. per bush	Ratio to Smallest Average Bush
(a)	(b)	(c)	(d)
1	<u>R. americanum</u>	27.7	11.1 - 1
2	<u>R. cynosbati</u>	6.9	2.8 - 1
3	<u>R. hirtellum</u>	3.2	1.3 - 1
4	<u>R. triste</u>	2.5	1.0 - 1



## Summary Discussion

In summary of the above discussion of Ribes infection and potential danger to white pine the following data recorded for four years on the Detroit Lakes Pine Defestation Study Plot were used:

- (1) Average percent of leaves present.
- (2) Average percent leaf surface completely infected at the time of inspection.
- (3) Average per cent of telia present.
- (4) Percentage of each species of Ribes present in the area.
- (5) Average size of bush of each species of Ribes.

By multiplying the first two items together, viz., the average percent of leaves present by the average percent of leaf surface infected at the time of inspection a factor for the average amount of blister rust infection present at the time of inspection for approximately equal units of foliage of each species of Ribes is obtained. By multiplying the amount of blister rust infection present by the average percent of telia present we arrive at an expression of the potential damage factor for equal units of foliage for each species of Ribes. For the purpose of obtaining a modified potential damage factor for any particular area where more than one species of Ribes is present the potential damage factor was multiplied by the percentage of the feet of live stems of the respective species of Ribes under consideration for that area.

These data show that at different times of the growing season there is a different degree of damaging power to be expected from such wild Ribes. The damaging power to be expected from such wild Ribes is continually in a state of change throughout the season. It has also been pointed out that relative susceptibility of Ribes is distinct from either (1) relative amounts of blister rust infection present on each species of Ribes at any one time, or (2) the potential damaging effect to white pine by species of Ribes. It is probable that early defoliation is one expression of greater susceptibility and that this susceptibility reduces to a considerable degree the damaging power of the Ribes bush or species.

### Potential Danger to White Pine from Blister Rust Inoculum Produced on Secondary Foliage

The question has arisen regarding the extent to which early defoliated bushes may develop a crop of secondary leaves and to what extent blister rust infection upon the same may become a menace to white pine during the same season. An inspection of Table 26 will give a picture of the abundance of secondary foliage and the amount and character of the blister rust infection on this foliage for the North Central Region according to the 1941 season's Ribes infection data. It is well to keep in mind a distinction between the character of primary and secondary foliage when considering the problem of their infection. Compared with primary foliage the number and size of secondary leaves are



relatively small. Secondary leaves being forced out prematurely appear to react differently than primary leaves in certain respects. Blister rust infection on secondary leaves tend to prolong the uredinial stage late into the season, and the leaves apparently do not commonly form excision layers and defoliate in the fall like the primary leaves. It may be they are somewhat more resistant to cold or frost also.

Table 27 gives a summary of the development and amount of blister rust infection on secondary foliage only of four species of *Ribes* for the four seasons recorded between 1938 and 1941 inclusive on the Detroit Lakes Pine Infection Study Plot. As compared to the primary foliage the total amount of secondary foliage was relatively small and the percentage of infected foliage on the *Ribes* involved on this study plot is an insignificant percentage of the total secondary foliage present. Examined bushes of *R. triste* and *R. americanum* did not develop secondary foliage during the four years observations were made. On September 20, 1938, of 23 bushes of *R. cynosbati* ten bushes had developed secondary foliage of which one bush only had one infected leaf. This amount of infection represented 0.73 percent of the total examined secondary leaf surface at the time of inspection and of this amount of infection 10.0 percent was in the uredinial stage, 30.0 percent in the telial, and 60.0 percent had become necrotic. Again on August 20, 1940 it was found that of 22 examined bushes 12 bushes had developed 60 secondary leaves of which one bush only had become infected on four leaves. This infection represents 2.6 percent of the total examined secondary leaf surface at the time of inspection and 100 percent of the infected surface was bearing uredinia only. *R. hirtellum* was the only other species of *Ribes* upon which the secondary foliage became infected by blister rust. This infection was reported on August 20, 1940 when of four examined bushes two had developed secondary leaves of which one bush bore one infected leaf. This represented 0.13 percent of the total secondary leaf surface and 100 percent of this was in the uredinial stage.

From the above data it may be concluded that:

- (1) As compared to the primary foliage the total amount of secondary foliage is commonly relatively small.
- (2) The percentage of infected surface on the secondary foliage of the *Ribes* involved on the Detroit Lakes Plot is an insignificant portion of the total secondary foliage produced.
- (3) The average size of the secondary leaves is much smaller than that of the primary foliage.
- (4) The chemical nature of these premature leaves appears to influence the development stage of the pathogen and thus prolong the seasonal production of uredinia. In two of the three cases of secondary leaf infection the pathogen was producing 100 percent uredinia at a season when telia might normally be expected to dominate.
- (5) Readings made later in the season than any taken on the Detroit Lakes Plot might show that blister rust on secondary foliage developed telia and prolonged the seasonal production of inoculum for pine infection but it is believed that the amount of inoculum so produced is relatively so small as compared to that on primary foliage that it is of little significance with respect to infection of white pine.



## Ribes Regeneration after Eradication

Beginning in 1934, permanent *Ribes* regeneration study plots have been established throughout the region, covering all of the *ribes* types concerned. Each plot is uniformly 13.2 feet wide (twice the side of a square-shaped millaore, 6.6 feet) and from one to fifteen chains in length. Each chain-long segment of a plot contains twenty millaores, or 1/30 of an acre. These plots are established and *ribes* recorded prior to *ribes* eradication, without the knowledge of the eradication crew. It was planned to examine each plot the same year after eradication and yearly thereafter for an indefinite period.

The number of plots established by states since 1934 is shown in Text Table 22.

Text Table 22. *Ribes* Regeneration Plots Established in the  
North Central Region by states, 1934 to 1941

State	<i>Ribes</i> Type A Live Swamp		<i>Ribes</i> Type C Upland Edwa		<i>Ribes</i> Type D Upland Pine		Totals	
	No.	Mil-	No.	Mil-	No.	Mil-		
	Plots	acres	Plots	acres	Plots	acres	Plots	Millaors
Illinois	-	-	2	240	-	-	2	240
Indiana	-	-	4	400	-	-	4	400
Iowa	-	-	2	220	-	-	2	220
Michigan	60	1,200	23	1,320	4	80	87	2,500
Minnesota	32	800	38	1,410	1	20	71	2,320
Ohio	-	-	19	900	-	-	19	900
Wisconsin	13	260	12	860	-	-	25	1,140
Totals	105	2,350	106	5,270	5	100	216	7,720

Of the 216 plots established, it is planned to continue only a very few, mostly in upland hardwoods. Such factors as inaccessibility, poor original establishment and intermittent examinations, have operated against the continuation of many of these plots. Also, due to the fact that we are now avoiding the costly work of eradication in live swamps as much as possible, we are not so immediately interested in the regeneration of swamp *ribes* as we are of upland species. We plan to continue a few upland type plots, each 5 to 15 chains in length. This size plot furnishes a fairly adequate basis to judge regeneration of upland *Ribes* species after eradication.

We have found that in the process of summarizing the data from a considerable number of plots, conditions even in the same *ribes* type are so dissimilar as to cover up significant trends in specific plots.

In observing the material as a whole, certain general trends not supported by data in this report, but derived chiefly from observation of the data, may be mentioned:

(1) In swamp type, including such species as *Ribes hirtellus*, *R. glandulosum*, *R. triste*, *R. americanum*, the chief regeneration source is sprouts from imperfectly pulled bushes. Since the ground is usually moist, any branches



left in contact with moist soil send out roots from nodes and start new bushes.

(2) R. triete is the species most commonly missed. This is a low growing species, and its leaves are sufficiently different from associated Ribes species, and so similar to small striped maples and certain annuals, that it is difficult to see.

(3) R. americanum is the species most likely to regenerate from crown sprouts. The crown is most firmly held in contact with the soil and is usually more deeply rooted than other associated species. R. americanum commonly produces vigorous crown sprouts the year of eradication.

(4) Regeneration by seed is not common in the swamp type. Usually what few seedlings are produced remain at approximately the same size, that is, two to four inches tall, year after year.

(5) In upland types containing chiefly R. cynosbati in the north, and R. missouriense in the south, the regenerative source is chiefly by seed.

(6) The more open the stand, and the larger the parent bush (and hence the greater the mineral soil disturbance) the larger the number and size of seedlings found. These seedlings are usually confined to the area of disturbance caused by pulling the parent bush.

(7) In general, the destruction of crowns of upland ribes is fairly complete when the bushes are pulled. In comparison with swamp ribes, there are few crown sprouts formed after eradication of upland ribes.

(8) In the upland, there are small bushes missed by eradication. Particularly where shade is dense, such bushes remain relatively inactive in growth, and often are shaded out and die.

(9) In well shaded hardwoods, where there is no major disturbance such as fire or logging, R. cynosbati surviving eradication remain dormant. Little growth is added to surviving livestock, and what seedlings are produced either die or fail to put on growth. Re-eradication under such conditions may safely be postponed unless immediate rust conditions are too severe, for from seven to ten years after initial working.

(10) Where fire or logging has taken place after eradication, the stimulation thereby given to regeneration of R. cynosbati is such that re-eradication is advisable within four or five years.

Conclusions drawn in paragraphs 9 and 10 above are brought out in a study of the effect of fire and logging on ribes in Ohio.

#### Effect of Fire on Ribes Regeneration after Eradication

In Monroe County, Ohio, three 1-chain long ribes regeneration plots (60 miles) were established in 1935 prior to eradication that same year. On Plots 4 and 5 the areas were similar in that they supported an overstory of white pine and cherry, and a ground cover of chokecherry, white pine and duff.



The soil was a clay loam. Ribes cynosbati was the only ribes species present. In 1936, on Plots 4 and 5, the areas were logged over and burned. Following the fire, ribes seedlings came up profusely.

Plot 6, (20 acres) was unburned, but was pastured in 1937. This area supported an overstory of maple, elm, walnut, ash; an understory of viburnum, hickory and maple; and a ground cover of Virginia creeper, ferns and leaf duff. The soil was a rocky loam. Ribes cynosbati was the only Ribes species found.

In 1941, two sprouts showed two racemes with several berries, and one bush of seedling origin in 1936 or 1937, four or five years old, and with 8 to 10 feet of livestock, showed 14 racemes with several berries.

There are certain clearly defined trends in Text Table 23:

(1) The original bushes eradicated in the 1935 eradication were destroyed by logging and burning in 1936.

(2) No seedlings were produced prior to logging and burning in 1936.

(3) The largest number of seedlings with the smallest amount of livestock was found in 1937, the year following logging and burning.

(4) From 1937 to 1941 the number of seedlings decreased and the amount of livestock increased with the exception of 1940.

(5) The 1940 examination was made on October 15, 1940. Original field notes mention that "most of the ribes leaves had fallen, and many seedlings were covered by deciduous leaves". It is thus probable that several of the seedlings present were missed in the inspection.

(6) Bushes from sprouts varied in number in 1941, but the average size of each sprout bush steadily increased.

(7) The number of bushes on the area six years after eradication and four years after logging and burning, was exactly six times the number originally eradicated.

(8) The feet of livestock six years after eradication was approximately 1.4 times that originally eradicated.

(9) Two of the four sprouts showed one raceme each with several berries four or five years after burning. One bush of seedling origin in 1936 or 1937 showed 14 racemes with several berries in 1941.

(10) Thus, where Ribes cynosbati is concerned, under conditions obtaining on the plots, and where logging and burning occur, subsequent rework is necessary within five years of such disturbance, in order to reduce the existing ribes population and prevent regeneration from seeds produced on such bushes.



Regeneration of *S. cymosabati* After Eradication in Areas of Known  
Known Ecological Disturbances

Test Table 24 shown on the following page gives the history of regeneration of *S. cymosabati* six years after eradication where no known ecological disturbances are present.

Certain trends in Test Table 24 may be significant:

- (1) The plot was in about three-quarter shade. The one bush with full P.I.B. shaded by eradication may have been shaded out and died within one year after eradication.
- (2) Seedlings were not found until two years after eradication.
- (3) With one exception in 1940, the number and feet of live stem of seedlings tended to increase from 1937 to 1941.
- (4) The average growth per seedling was very small, increasing in four years from 0.07 P.I.B. in 1937 to 0.4 P.I.B. in 1941. This slow growth probably due to competition with other vegetation, and to shade.
- (5) The small number of seedlings found in 1940 was due to the late fall eradication, October 15, when dead deciduous leaves covered up the little seedlings.
- (6) The one sprout-bush found in 1939 survived and grew slowly in 1941.
- (7) While the number of bushes found six years after eradication represented 120 percent of those originally on the area, the feet of live stem was only approximately 3 percent of the original.
- (8) No stems or fruit was found six years after eradication.
- (9) Thus, although six years after eradication there was present a small calculated figure of 1,600 bushes with 975 P.I.B. per acre, the small size of these bushes, and the absence of berries would make it impracticable to perform revegetation within six years. Future inspections on this plot will undoubtedly furnish information on this point.

Comparison of *S. cymosabati* Seedling Growth and Development after Eradication in  
an Area Burned and One Unburned

In Chart 23 the number of seedlings and their feet of live stem from Plots 4 and 5, burned in 1935, and Plot 6, unburned have been charted on a per acre basis. The effect of fire is striking. Two years after eradication and one year after logging and burning seedlings developed at the per acre rate of 18,050 bushes with 2,925 feet of live stem. The number of bushes rapidly decreased, and the feet of live stem increased until six years after eradication and five years after burning, the per acre number of bushes approached a constant of 2,300, and the live stem 18,225, and continuing to increase rapidly.





Test Table 24 - Effects of Irradiation in 1935 and no Feathering or other disturbance until 1941, on  
R. c. concolor Plot 6 & 1 20 Hlares! Monroe County, Ohio

Date of Irradiation	Ecological Disturbance	Original		Sandflies		Burrheads		Total	
		Bushes (u)	F.L.L. (d)	Bushes (e)	F.L.L. (f)	Bushes (g)	F.L.L. (h)	Bushes (i)	F.L.L. (j)
Before Irrad. 9/20/35	Stratified 5/22/35	30	543.0	0	0	0	0	30	543.0
After Irrad. 9/23/35		1	0.5	0	0	0	0	1	0.5
1 Yr. after Irrad. 9/10/36		0	0	0	0	0	0	0	0
2 Yrs. after Irrad. 9/29/37		0	0	11	1.0	0	0	11	1.0
3 Yrs. after Irrad. 9/20/38		0	0	13	2.1	0	0	13	2.1
4 Yrs. after Irrad. 8/30/39		0	0	20	4.5	1	1.3	20	5.8
5 Yrs. after Irrad. 10/15/40		0	0	2	0.4	1	2.0	3	2.4
6 Yrs. after Irrad. 7/16/41	Postured 1941	0	0	38	15.5	1	3.0	35	18.5



In marked contrast on the unburned portion, two years after eradication the per acre number of seedlings was 780 with 50 feet of live stem. The number of seedlings and feet of live stem increased relatively slowly. Six years after eradication the number per acre was 1,750 with 775 feet of live stem.

Since Plot 6 is part of the same area on which Plots 4 and 5 were established the only critical difference is that Plots 4 and 5 were burned, and 6 was not. Hence it is logical to believe that the reaction of R. cynosbati seedlings on Plot 6 were normal on an unburned area following eradication.

There is also a striking contrast in the rate of growth of seedlings on burned and unburned areas. This is brought out in Text Table 25.

Text Table 25. Rate of Growth of R. cynosbati Seedlings on Burned and Unburned Areas Following Eradication in 1936

Time of Inspection	Average F.L.S. Burned, 1936	Seedlings per Bush Unburned
1 Year after Eradication	0.15 F.L.S.	0.07 F.L.S.
2 Years after Eradication	0.71 F.L.S.	0.16 F.L.S.
3 Years after Eradication	1.22 F.L.S.	0.24 F.L.S.
4 Years after Eradication	2.69 F.L.S.	0.20 F.L.S.
5 Years after Eradication	2.38 F.L.S.	0.44 F.L.S.

These data show that where logging and burning occur after eradication of abundant R. cynosbati bushes, rework should be done within four or five years after burning. Where conditions are similar, except that no burning occurred, rework is not advisable for an indefinite number of years, so far as seedlings are concerned, because they would be too hard to find and their eradication too ineffective and costly, at least within six years after eradication.

#### General Summary of Effectiveness of Control Studies, 1941

General conclusions and trends of and to the control program brought out in the 1941 studies are listed briefly.

(1) In a study of pine infection and present ribes conditions on 22 upland areas where initial ribes eradication had been performed from 3 to 9 years previously, no cankers originating since ribes eradication were found on 8 of the plots. On 16 plots 12.0 percent of the trees were initially infected before, and only 0.7 percent after ribes eradication.

(2) In 1941 ribes feet of live stem per acre varied from 0 to 2,156 on these plots, with an average of 114.6 bushes, with 216.2 F.L.S. on 8 plots showing no cankers since eradication, and 47.5 bushes with 276.6 F.L.S. on areas with one or more cankers found since eradication.

(3) No correlation was apparent between cankers formed since eradication, and amount of ribes present in 1941.



(4) Apparently the size of bark was more important than the quantity of live tissue. On the 8 plots with no new cankers the average size of bark in 1941 was 2.9 F.L.S., while on the 10 plots with new cankers it was 3.6 F.L.S.

(5) In a study of canker production on an area in Chippewa County, Wisconsin, initially worked in 1935 with one not worked in the same locality, no cankers originating since 1935 were found on the former, while two-thirds of the infected trees on the latter became initially infected after 1935.

(6) A similar study in Delta County, Michigan, showed a marked reduction in cankers formed since eradication on a protected area contrasted with abundant canker production since the date of eradication on a similar but unprotected area.

(7) Continued annual extension of canker measurements in 1941 of tagged cankers showed that the downward growth increased with increased age of cankers. The average annual growth downward increased from 0.2 inches on one year old cankers to 1.8 inches in 6 year old cankers.

(8) Downward canker growth also increased with increased diameter of pine branches. Although subject to fluctuations, annual canker growth increased from 0.65 inches on 0.1 inch diameter to 2.8 inches on 0.9 inch diameter.

(9) The significance of these growth characteristics lies in the fact that when a canker gets older and grows into larger branches its chance of surviving and girdling the trunk is increased.

(10) Studies have shown that careful observations will disclose only 4.5 percent of cankers of a given year's origin one year later; 13.1 percent two years later; 33.1 percent three years later; 59.1 percent four years later; 88.8 percent five years later. This factor should be considered in evaluating pine infection funds.

(11) Seasonal examinations of the same four Ribes species, *R. cynosbati*, *R. hirtellus*, *R. triste*, and *R. americanum* during each of the years 1935 to 1941 at Detroit Lakes, Minnesota, has brought out significant information as to the damaging power of different Ribes species at different times of year in an area of abundant pine infection.

(12) For equal amounts of ribes foliage the production of telia was greatest on *R. cynosbati* to the first part of August; on *R. hirtellus* during latter part of August; and on *R. triste* throughout September. The relative damaging power of *R. americanum* was negligible throughout the season at Detroit Lakes.

(13) These differences in telial production at various times of the year are quite closely tied up with defoliation caused by the rust. Thus, to a limited extent, the greater the susceptibility, the greater the defoliation and the less the production of telia during the latter part of the season.

(14) Given an area of pine infection, these data indicate that the period of telial production and consequent infection of pines is greatly prolonged if several Ribes species are involved.



(12) The study of white regeneration after logging is being continued by the Forest Service. It is hoped that the study will be greatly aided by the fact that the study is being conducted in a region where the white regeneration is being studied throughout the region.

(13) In some types the chief type of white regeneration is by sprouts or by sprouts of new plants by layering in the deep soil.

(14) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

(15) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

(16) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

(17) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

(18) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

(19) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

(20) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

(21) In some types the chief type of white regeneration is by seedlings. The amount of seedlings produced depends largely on the amount of seedlings in the soil and on the amount of seedlings in the soil.

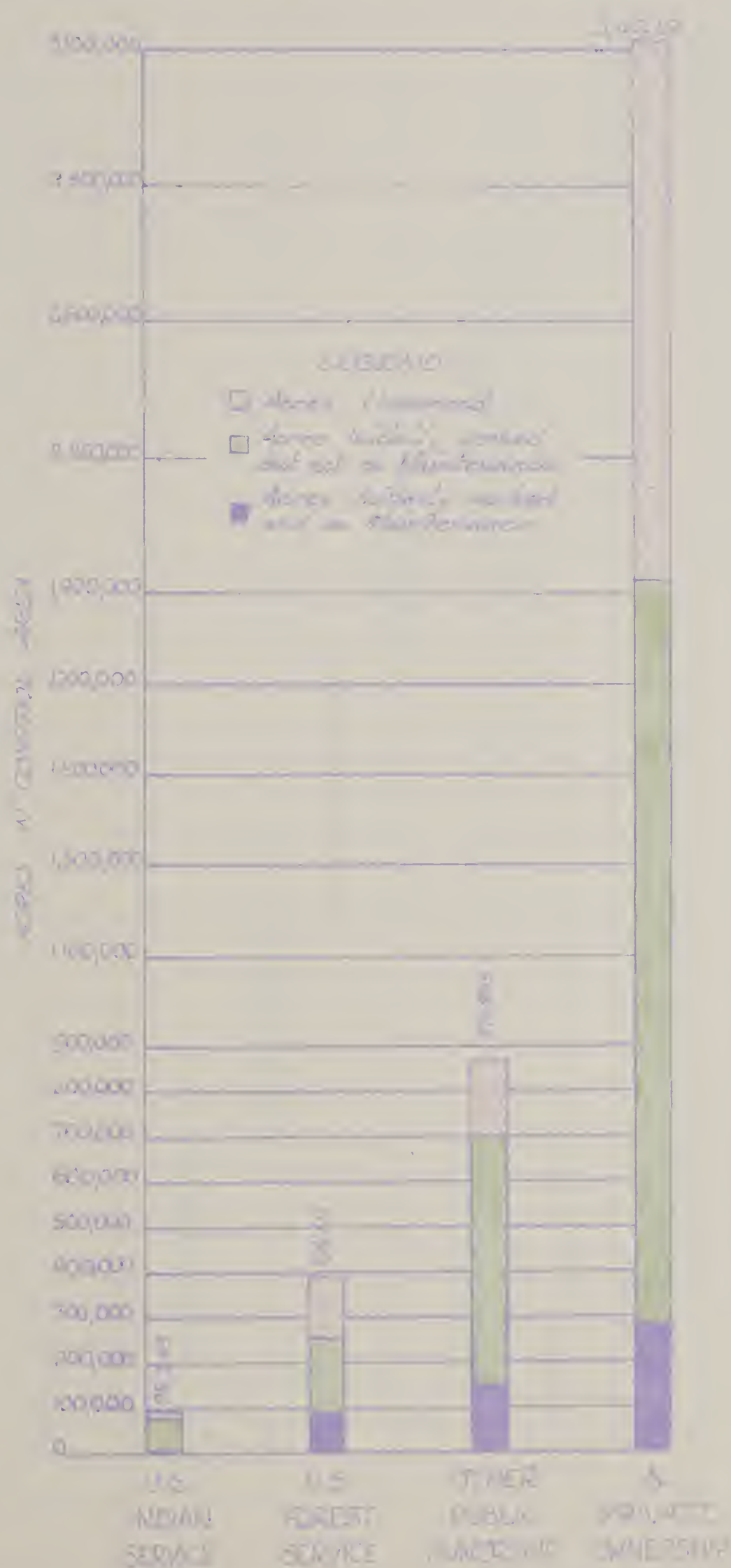






# CHART 2

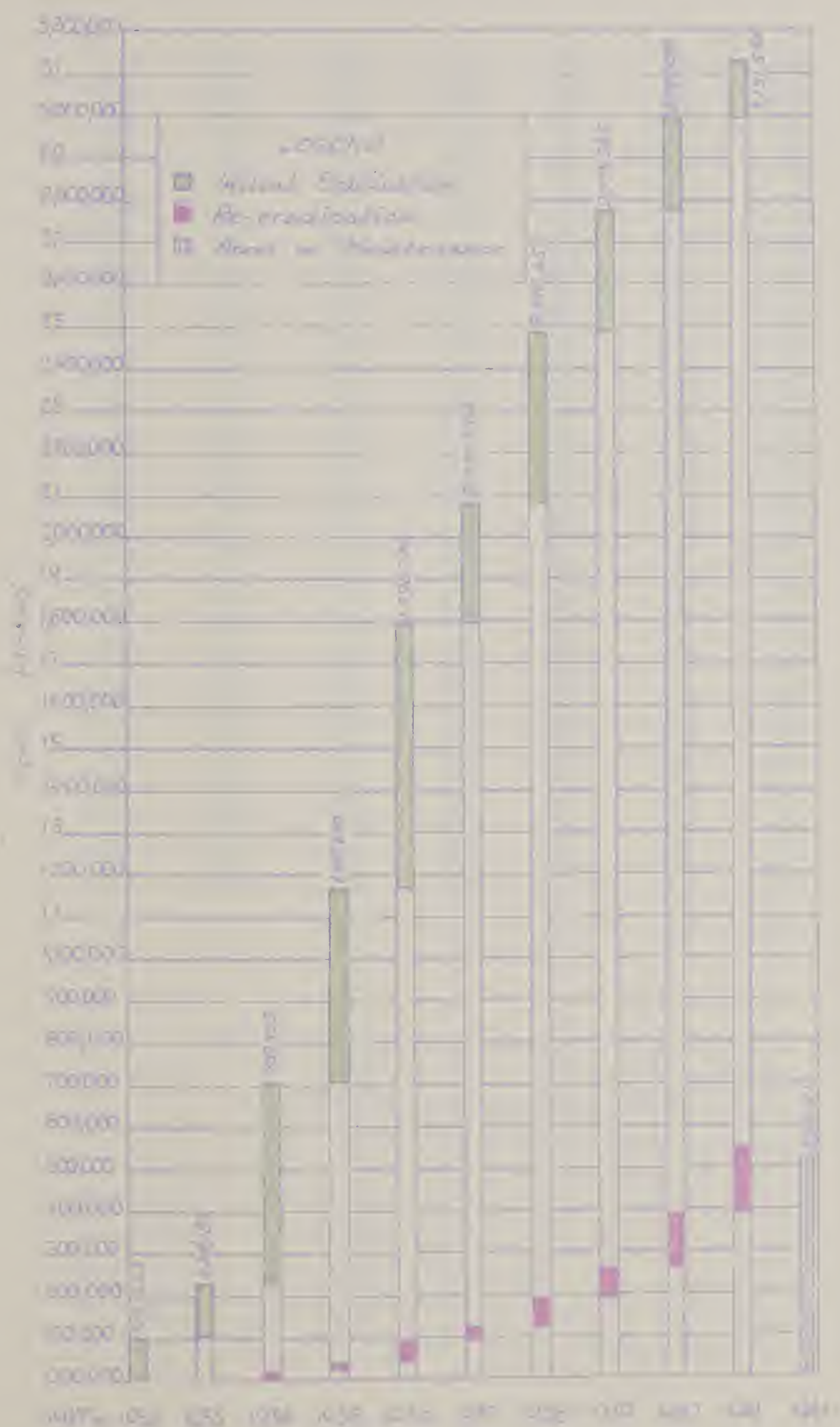
Summary of the amount of money for maintenance, including  
 interest, but not on maintenance and interest on the  
 same claim for North Central Region, in December 1960  
 Based on Table Number 7







Change Order costs incurred by other Contractors as  
 indicated in Navy's Memorandum of Dec 19 1960  
 Navy's General Order  
 Data in Chart 3 of AGO Report 3 Table 3 of 34 pages



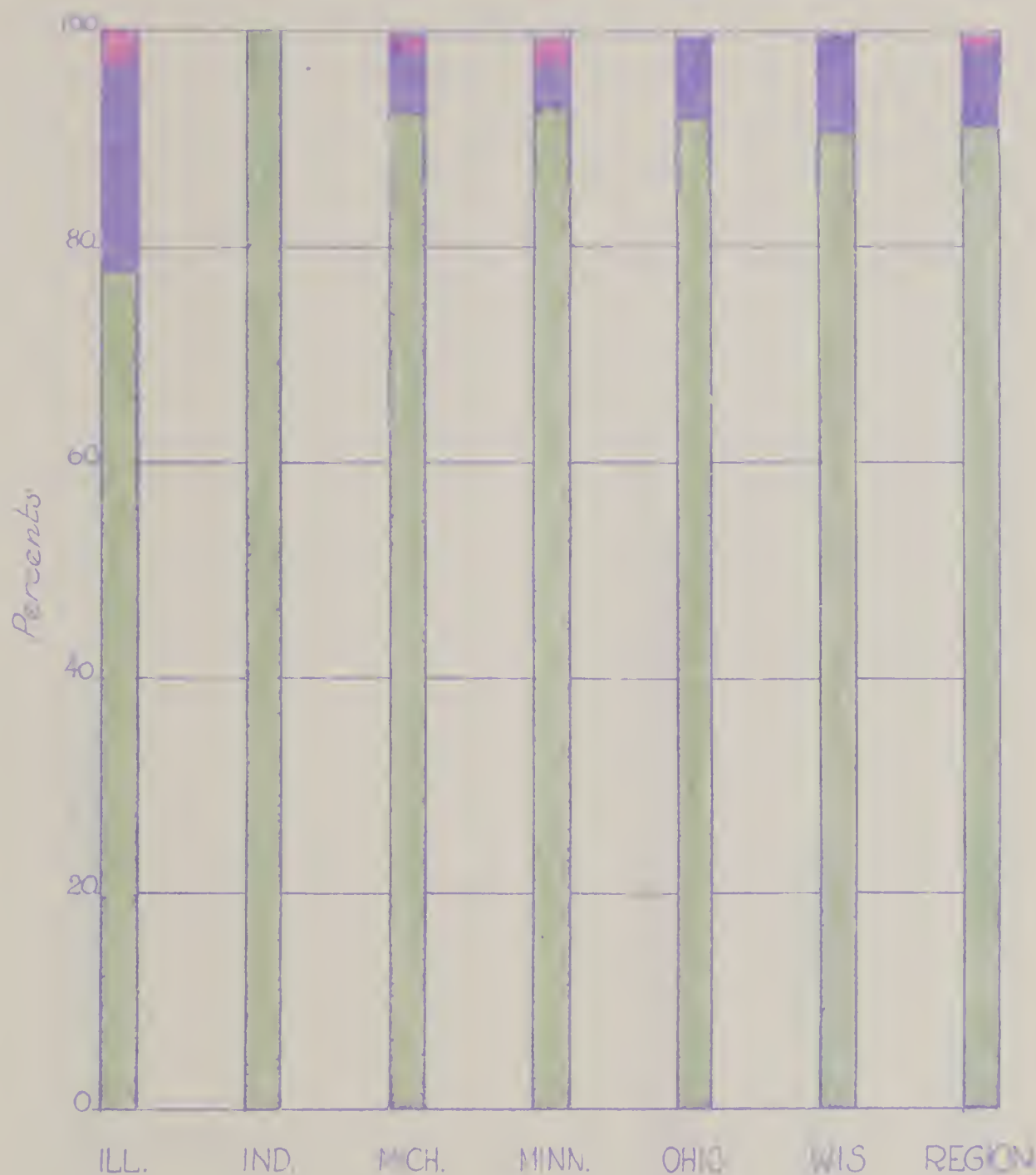




# CHART 3

Showing Percent of Acres in Each Feet of Live Stem Class after Eradication, 1941, by States in North Central Region.

Based on Table 4



PERCENT OF ACRES WORKED IN EACH FEET OF LIVE STEM CLASS

STATE	ACRES WORKED & CHECKED	F. L. S. PER ACRE AFTER ERAD.				TOTAL
		0.0-15.0	15.1-25.0	25.1-50.0	OVER 50	
ILLINOIS	2632	77.8	18.4	3.8	0.0	100.0%
INDIANA	90	100.0	0.0	0.0	0.0	100.0
MICHIGAN	107,863	92.1	5.4	2.2	0.3	100.0
MINNESOTA	32,959	92.7	3.5	2.6	1.2	100.0
OHIO	8,726	91.0	8.3	0.0	0.7	100.0
WISCONSIN	73,156	90.3	9.4	0.3	0.0	100.0
TOTAL REGION	224,426	91.4	6.7	1.6	0.3	100.0

0.0-15.0 F.L.S. per Acre

25.1-50.0 F.L.S. per Acre

15.1-25.0 F.L.S. per Acre

over 50.0 F.L.S. per Acre





# CHART 5

Summary Number of Locations of Collected Moss  
Growth Plants Found on Railroad during 1941 in  
States in the North Central Region

Based on Table 102



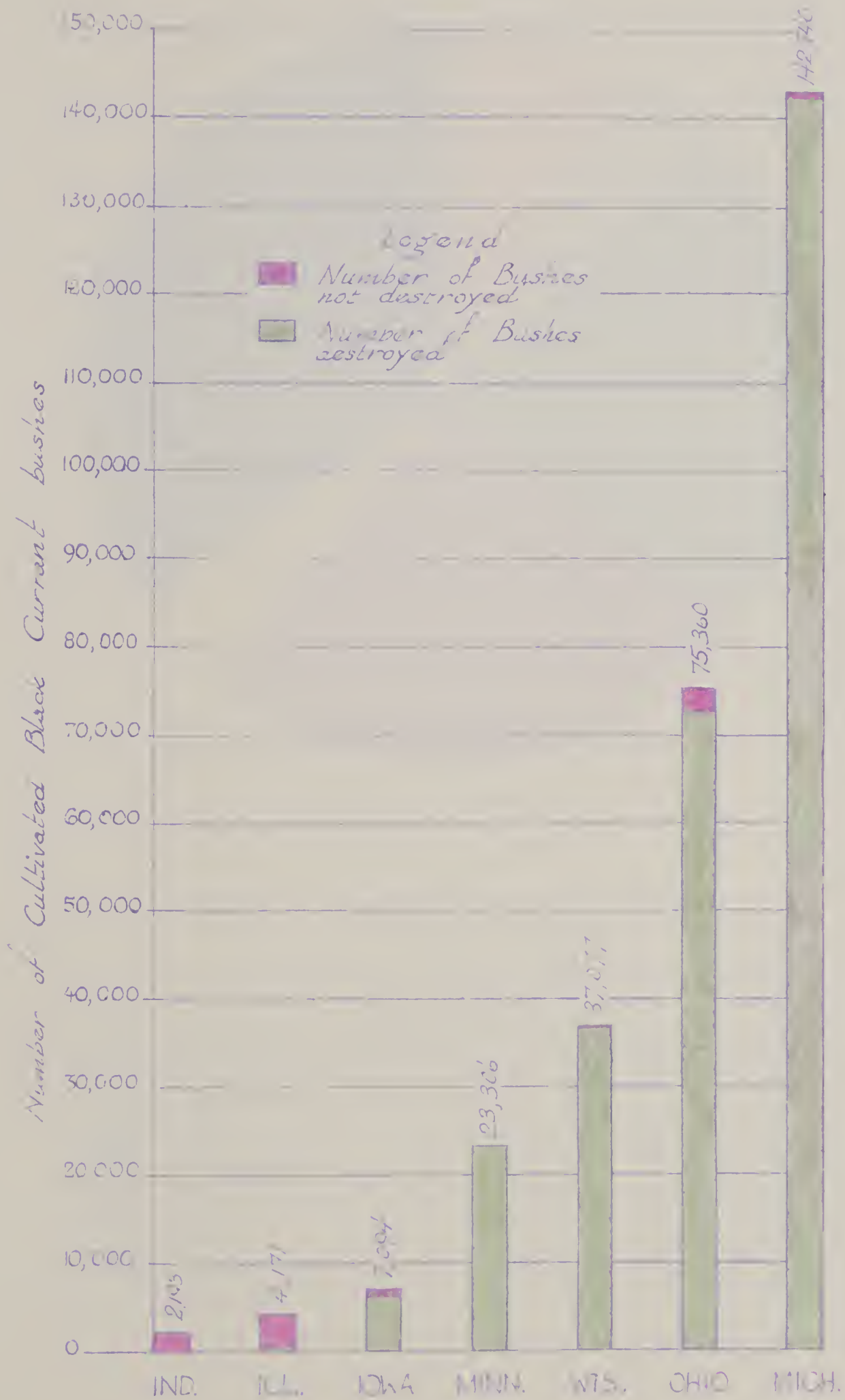




# CHART 6

Showing Number of Cultivated Black Currant bushes round & destroyed to December 31 1911

By States in the North Central Region. Based on Table 11







# CHART 7

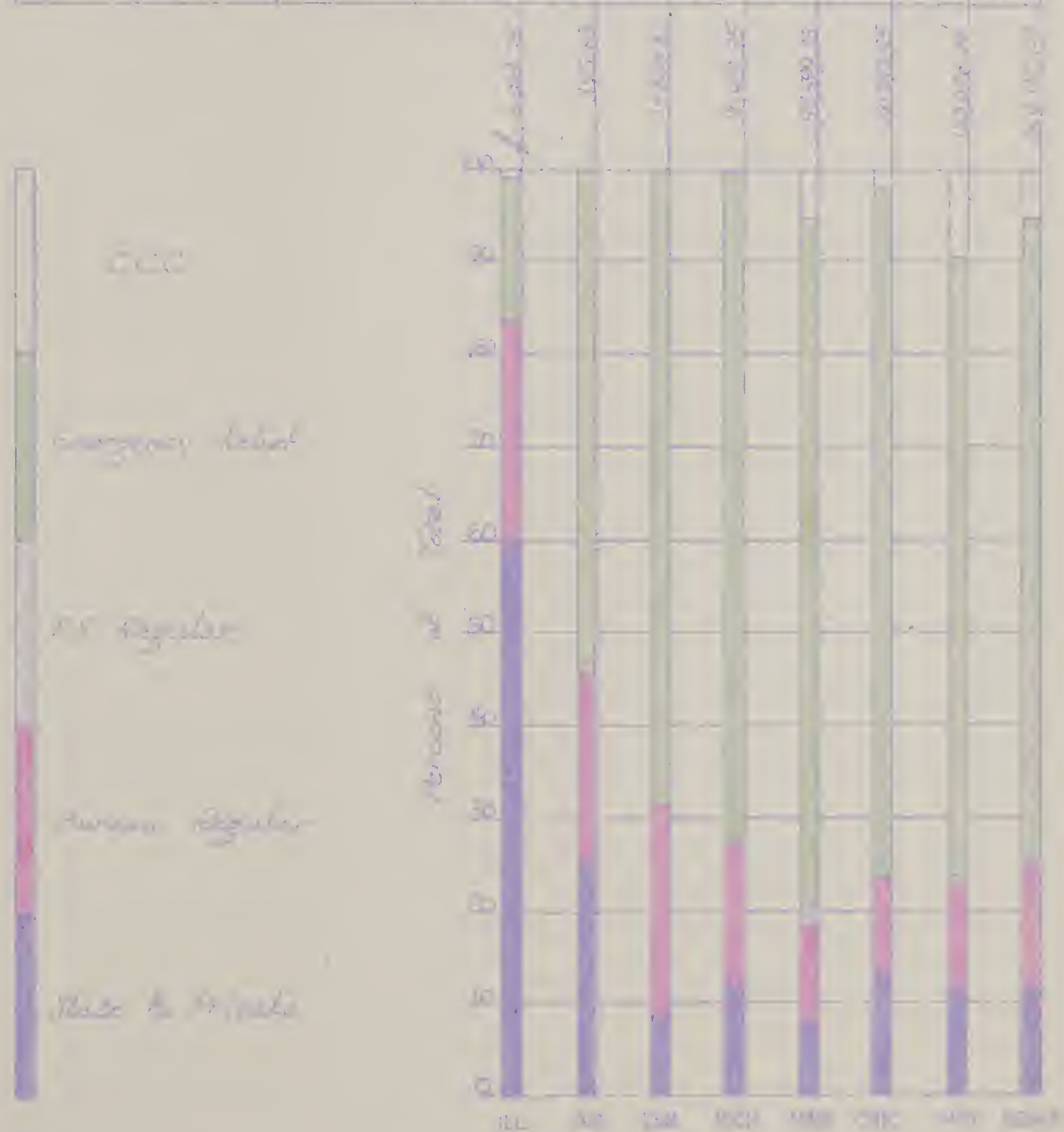
Summary of Total North Central Region  
Contribution to the U.S. Total, 1951  
(Based on Table 2.0)



STATE	AMOUNT	PERCENT OF TOTAL
Illinois	28,546.10	19
Missouri	4,187.70	1.2
Indiana	222.05	0.1
Iowa	13,811.11	3.7
Michigan	83,634.90	23.3
Minnesota	88,237.56	24.6
Ohio	16,135.94	5.6
Wisconsin	122,721.84	34
TOTAL	359,711.20	100.0







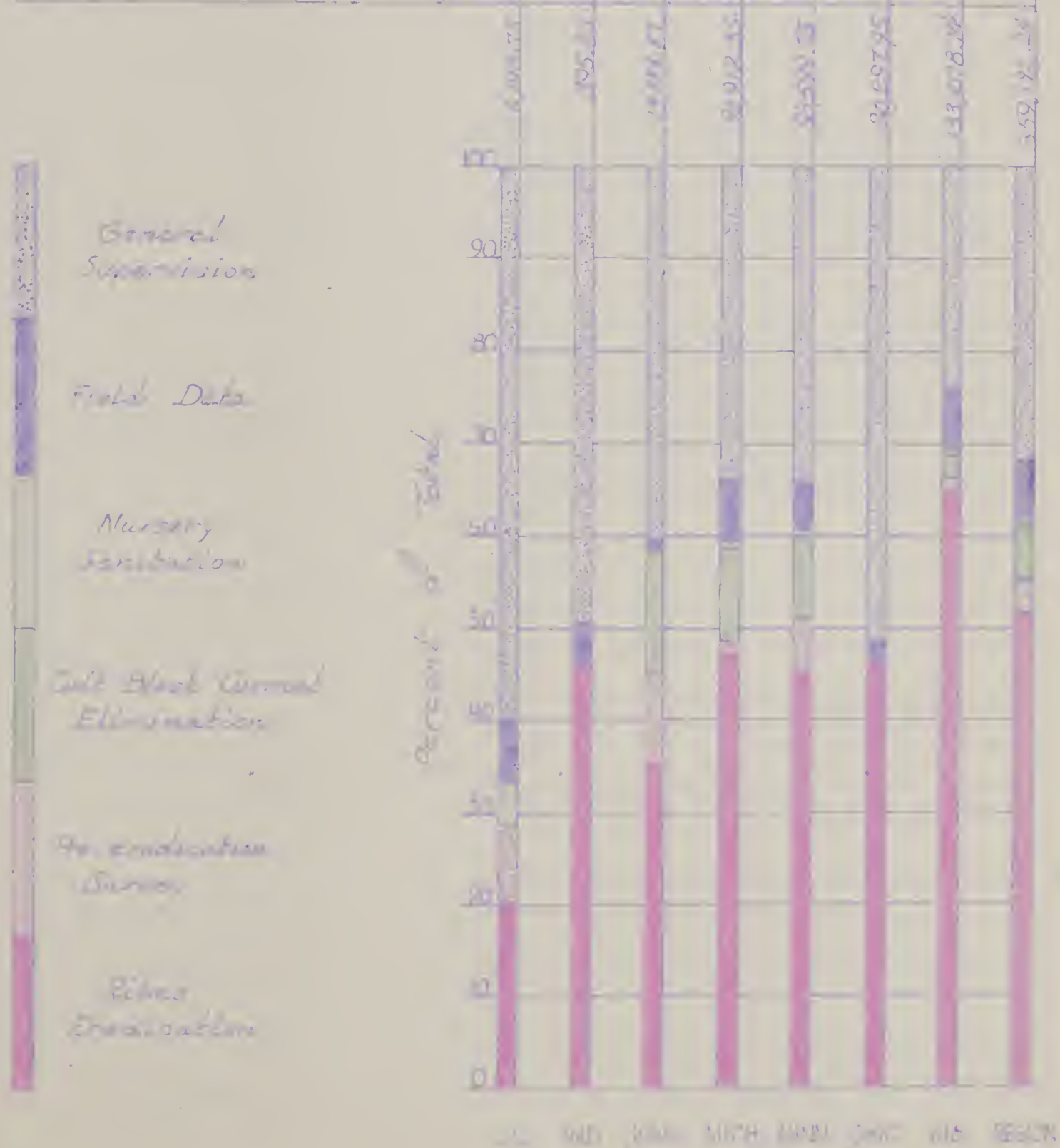




# CHART 9

Summary of Amounts & Expenditures including Miscellaneous Other Cost provided in Each State, Classified by Activities for North Central Region, 1941. Based on Census Report Table 4, Sheet E

ACTIVITY	AMOUNT	ILL.	IND.	IOWA	MICH.	MINN.	OHIO	WIS.	REGION
Gen'l Supervision	48,883.17	60.0	40.5	40.4	33.9	33.9	36.2	24.1	32.0
Field Data	31,772.36	6.8	4.3	1.4	7.1	5.8	2.3	6.9	6.1
Nursery Evaluation	2,068.25	4.7	0.0	2.0	0.4	0.6	0.0	0.6	0.6
C.B.C. Elimination	82,959.36	0.0	0.0	13.7	6.4	9.0	0.0	2.3	6.4
Re-cond. Survey	15,197.46	3.0	0.0	9.6	1.5	6.5	0.1	1.5	7.1
River Evaluation	180,371.21	20.5	16.2	35.3	40.7	40.4	45.8	54.6	31.8
TOTALS	359,142.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0



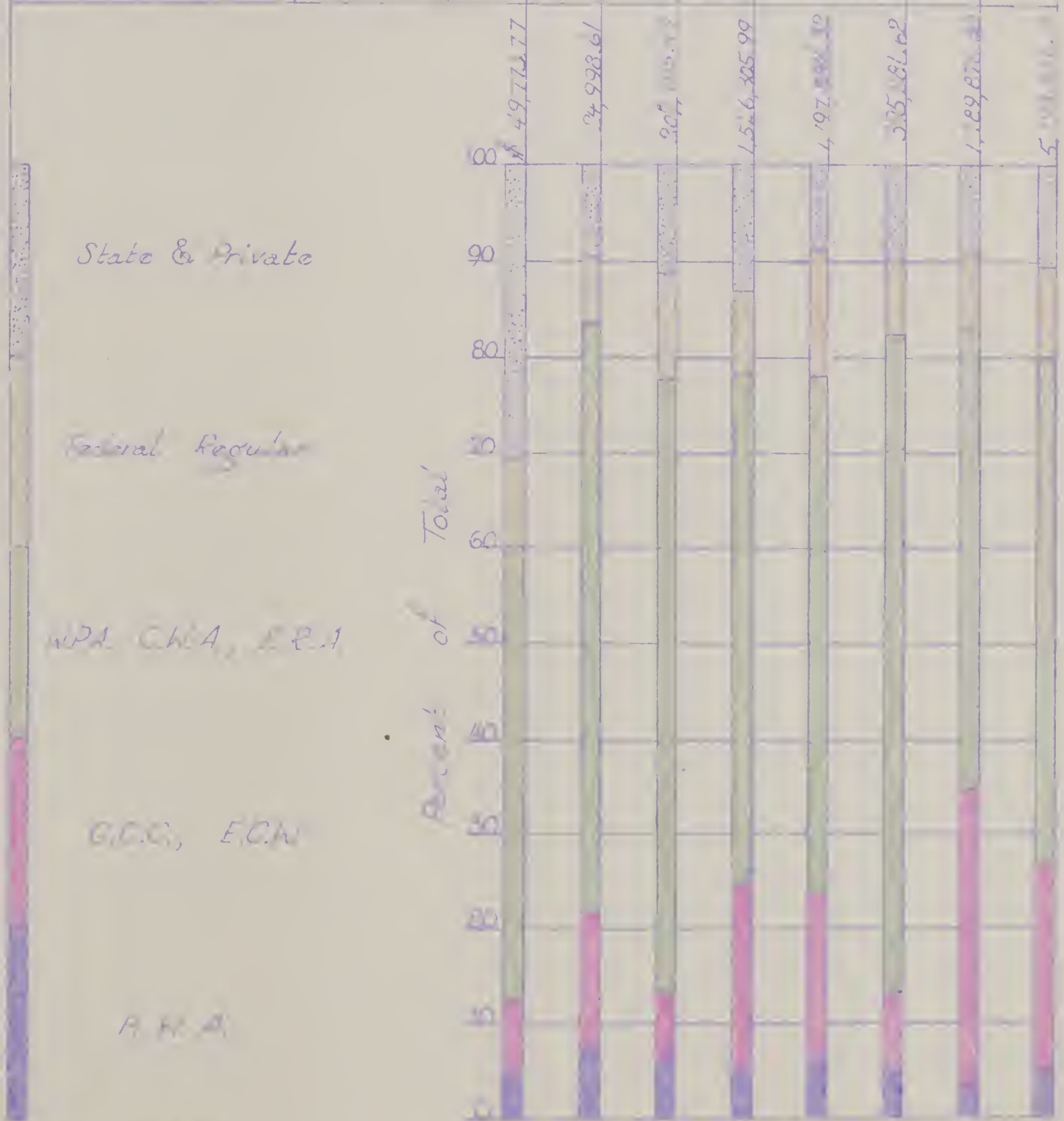




# CHART 10

Working amount of Expenditures in Farm State, according to the  
 Mainline Office Costs presented. Made by each Agency, North  
 Central Region, 1918 to 1940. Based on Committee Supplementary The  
 Survey Farm la.

AGENCY	AMOUNT	ILL.	IND	IOWA	MICH.	MINN.	OHIO	WIS.	REGION
State & Private	532,853.27	30.4	9.8	1.0	11.8	8.8	9.7	9.0	10.4
Federal Regular	498,353.85	7.1	6.5	1.5	8.9	10.0	7.6	8.0	7.5
N.P.A., E.W.A., E.R.A.	2,786,740.70	41.6	61.7	14.3	53.8	54.5	69.3	87.3	53.7
C.C.C., E.C.W.	1,132,820.77	8.0	14.5	7.2	19.8	17.6	8.5	31.5	21.8
P.W.A.	241,974.83	4.6	7.5	6.2	4.8	6.2	9.0	3.8	4.6
Total	5,192,876.10	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0



LEGEND



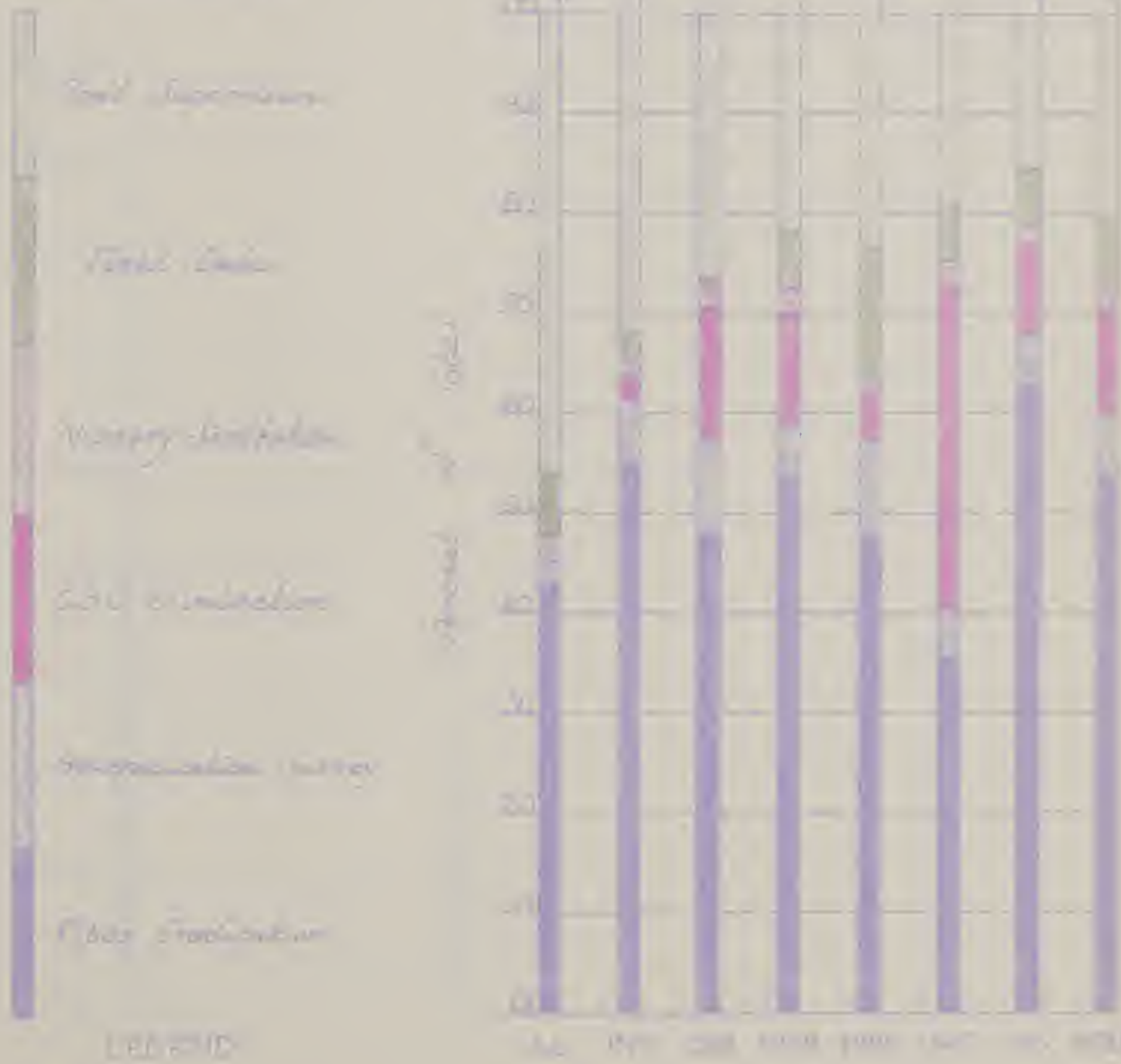


# CHAPTER 11

Activity: Learning to Organize a Good Study Session  
 Materials: After class, prepare a Good Study Session plan  
 Submit: Submit your plan to the teacher in a Good Study Session plan  
 due in class.

ACTIVITY	TIME (HRS)	IND	COM	WCP	MIN	CHG	WID	RES
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20
Good Study Session	1 hour	40	20	20	20	20	20	20

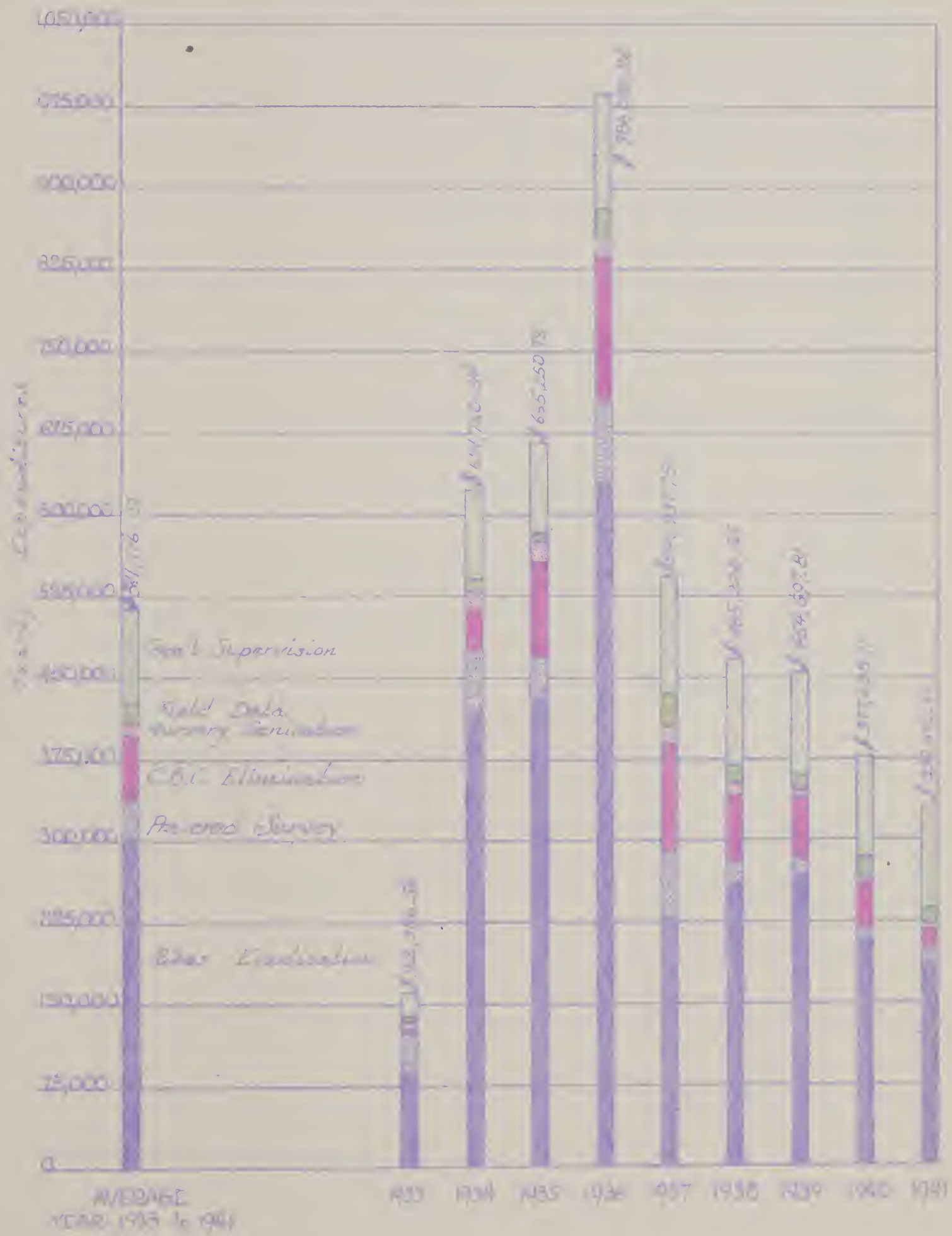
Activity: Learning to Organize a Good Study Session  
 Materials: After class, prepare a Good Study Session plan  
 Submit: Submit your plan to the teacher in a Good Study Session plan  
 due in class.







## 12

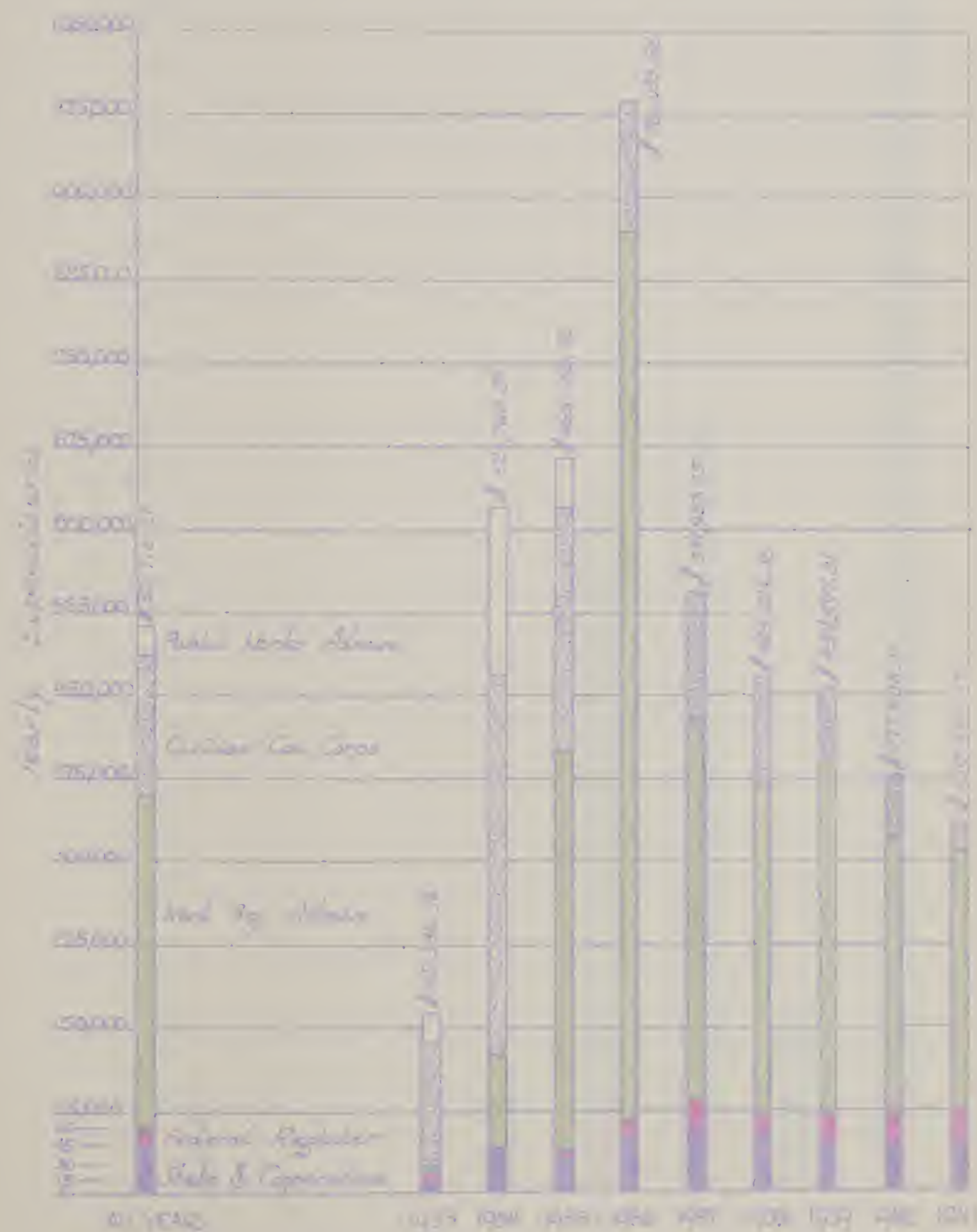






# CHART 13

Expenditures in the North Central Region, Excluding the Minnesota Office, January 1942 to the termination of operations. Based on Cash Values in Annual Reports, 1942 to 1949.







# CHART 14

Total Man Months Employment by States in North  
Central Region during Calendar Year of 1941  
Based on Table 17





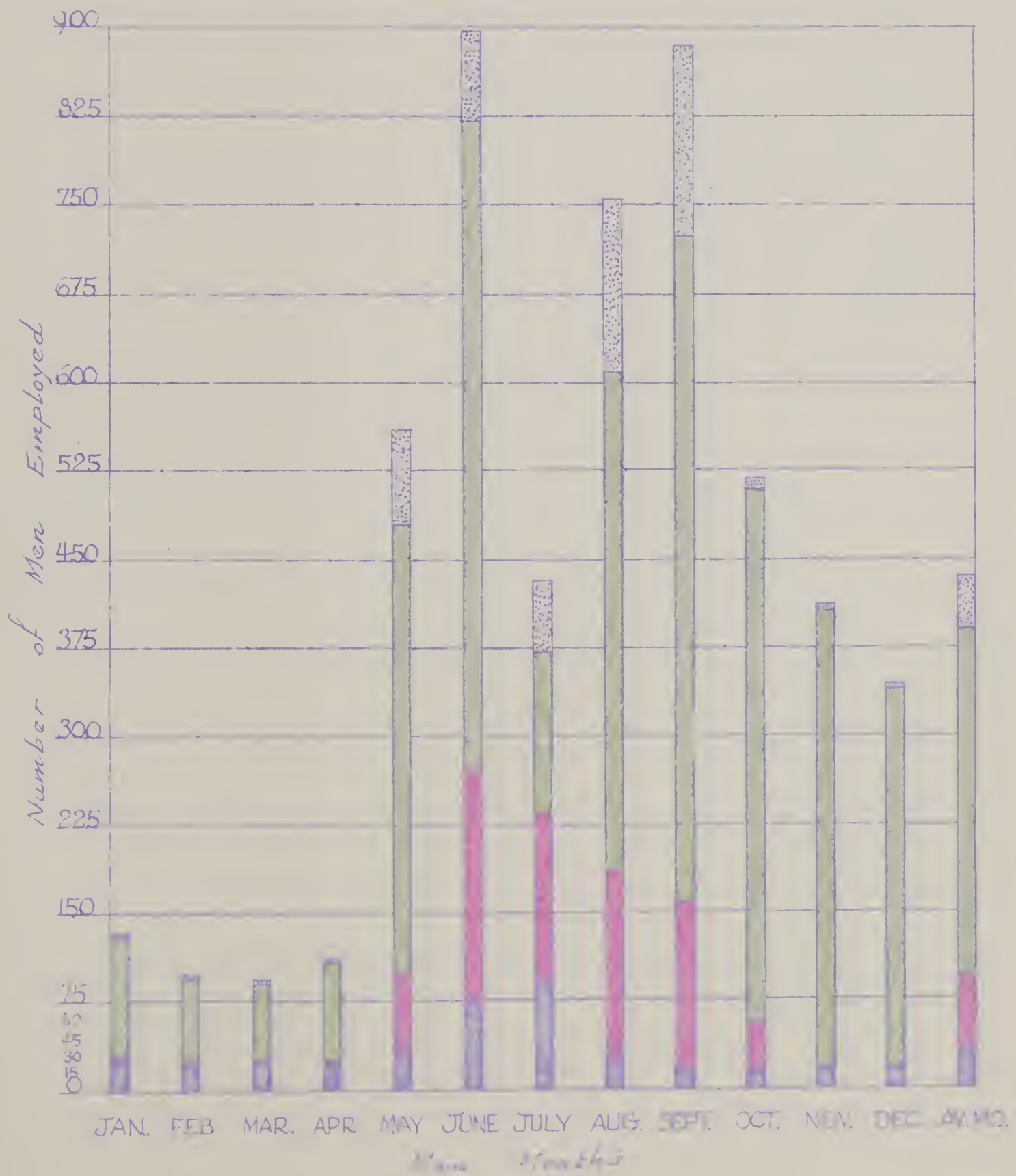


# CHAPT 15

Showing the approximate number of Men Employed by Months and Agencies in the North Central Region, 1941.  
Based on Table 16

## LEGEND

- Other W.P.A. & N.Y.A.
- Federal W.P.A.
- C. C. C.
- State & Regular





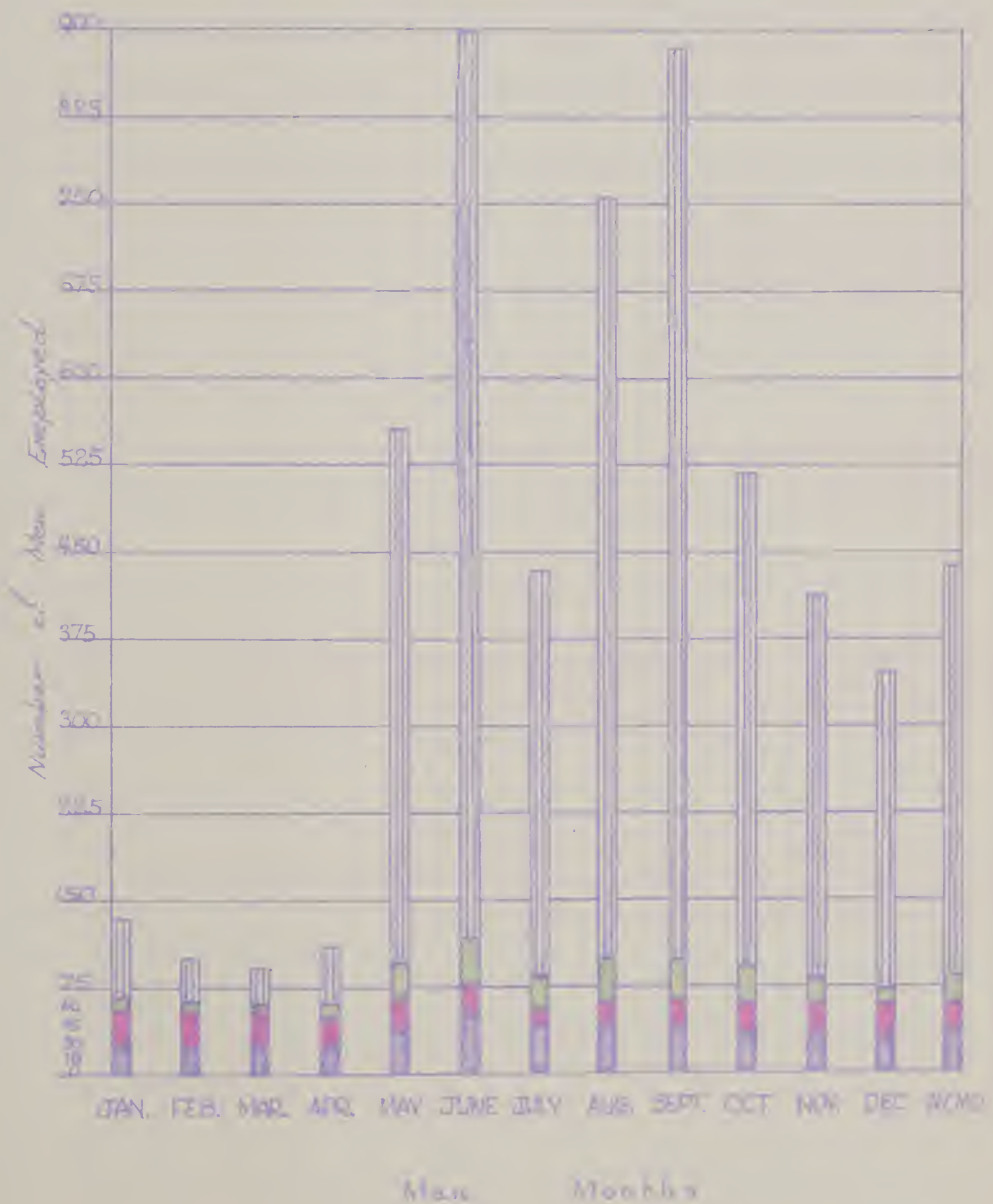


# CHART 16

Seasonal Approximate Number of Men Employed by month  
and Trade Class in the North Central Region, 1941.  
Based on Table II

## LEGEND

- Laborers
- Foremen
- Clerical
- Leaders





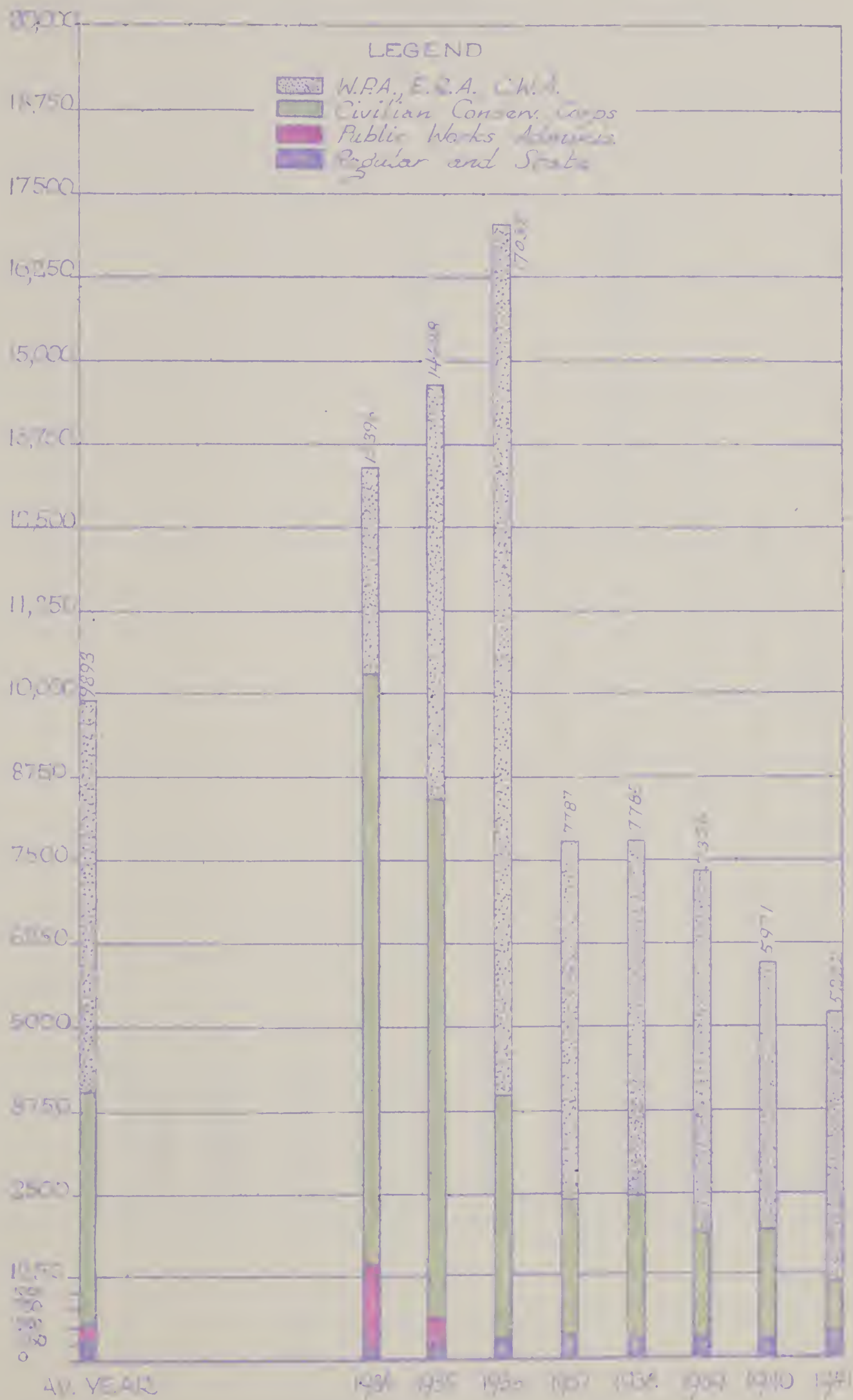








Summary of New Mexico Employment in the Federal Civil  
 Control Program, North Central Region, by Year, 1934-1941  
 From Annual Reports of Year's Concerned

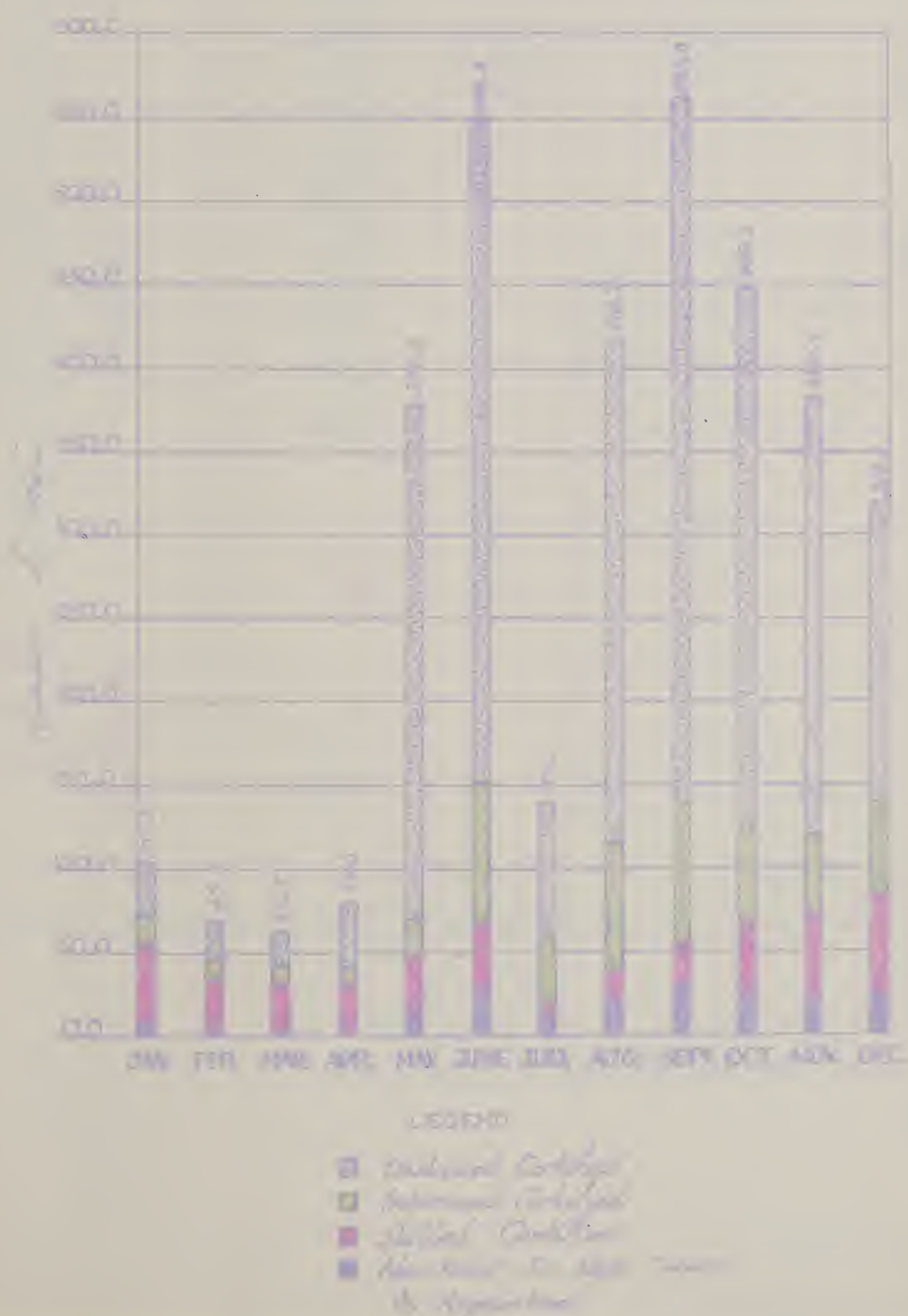






# CHART IV

Monthly number of new passengers in motor ships  
to Alaska and Bay of Chukotka from North American  
Ports, 1900. Same as Table 10

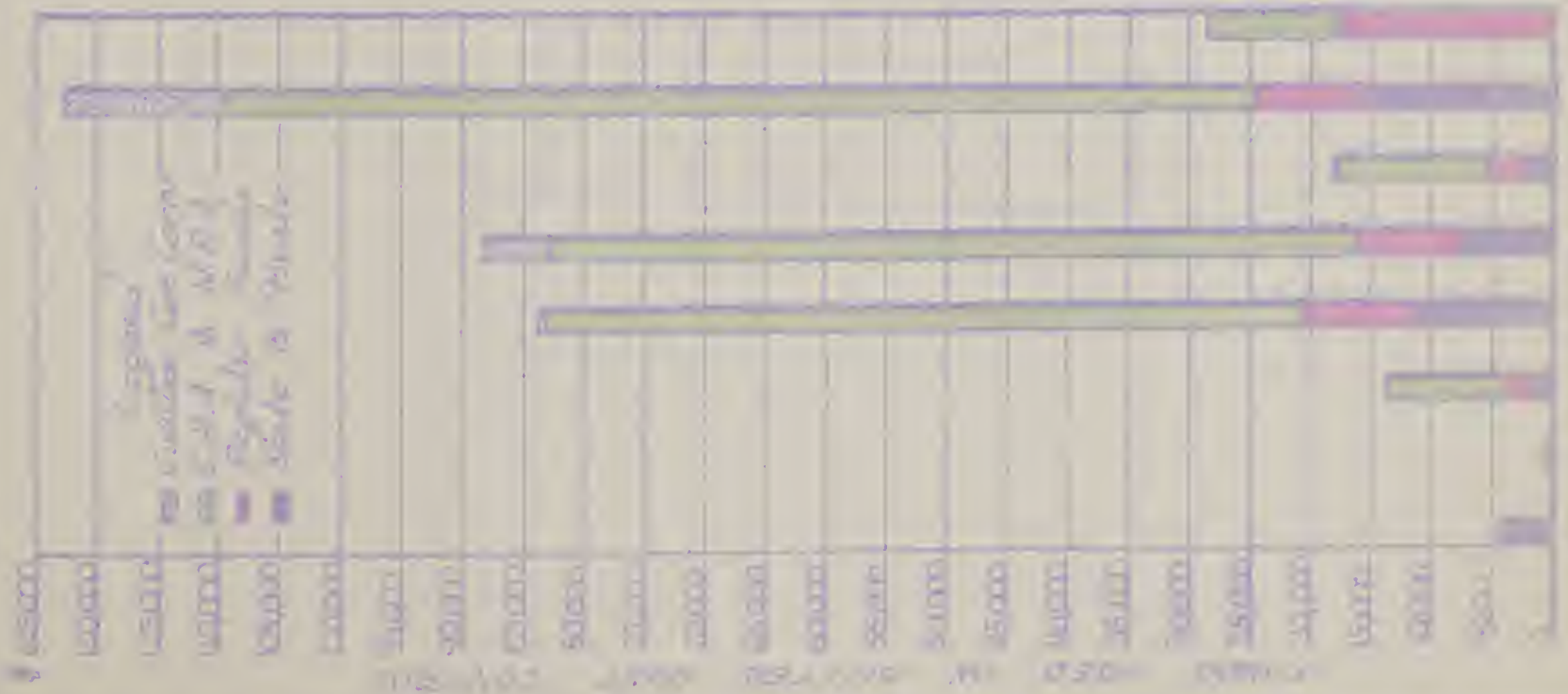






# PICTORIAL SUMMARY CHART 20

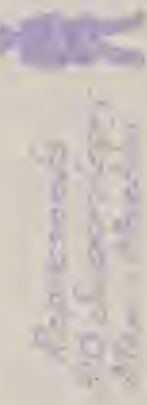
Showing Status of Local Contr. to End of 1941; Man-Making Employment and Funds (Good savings) Year of 1941 in the North Central Region.



## LEGEND

Red = Total Area of U.S. Vol. Produced  
 - Total Area of U.S. Vol. Produced  
 Blue = Total Area of U.S. Vol. Produced  
 Each tree symbol = 10,000 tons of U.S.  
 Each tree symbol = 10,000 tons of U.S.  
 Each tree symbol = 10,000 tons of U.S.

Represents 100 Man-Made of Labor



Showing Status of Contr. to End of 1941; Man-Making Employment and Funds (Good savings) Year of 1941 in the North Central Region.

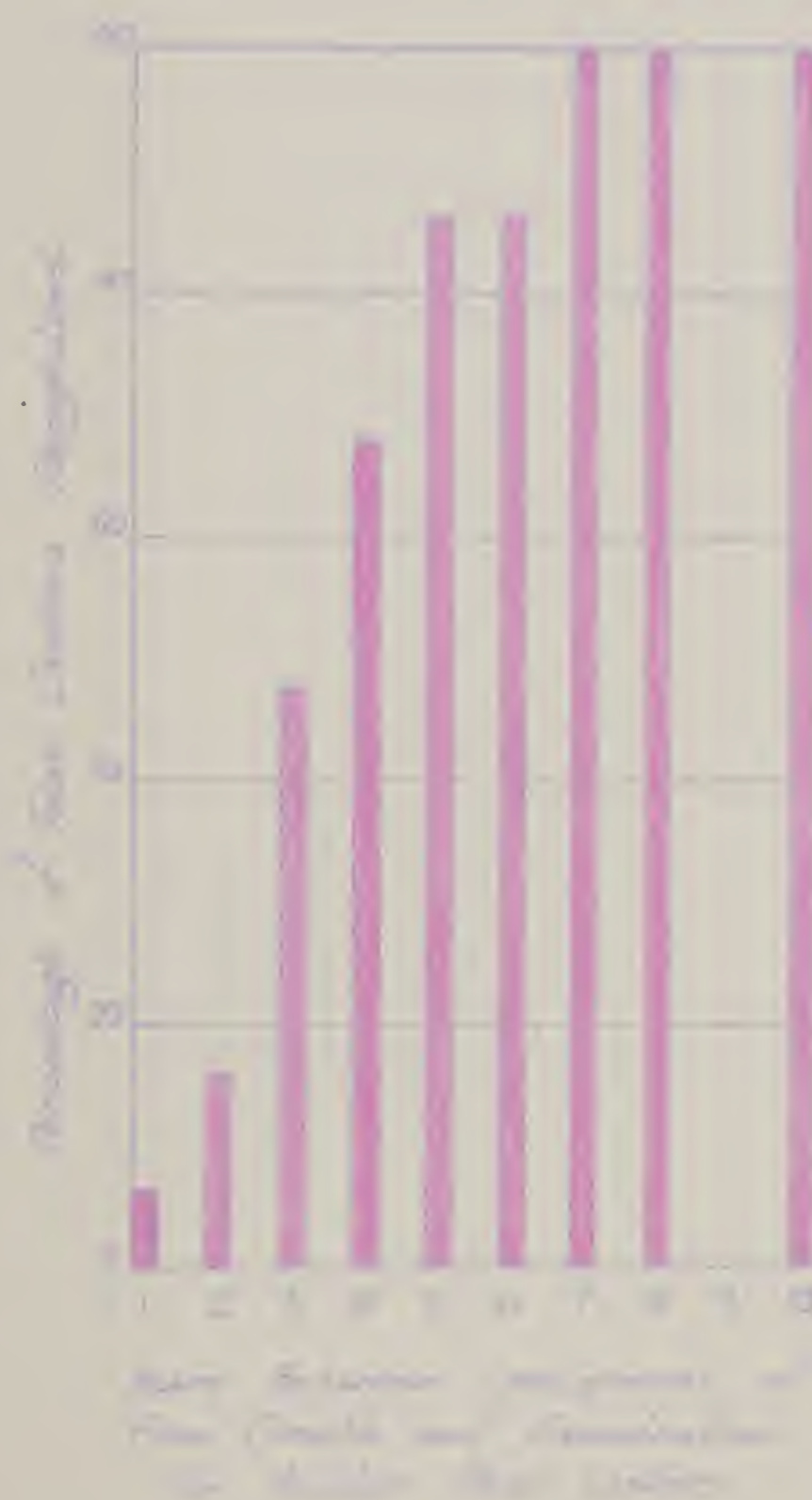




# CHART 2

Plot of the number of days per  
month of the year when the  
temperature is above 60° F.

Number of days per month when the  
temperature is above 60° F. (See Table 1)











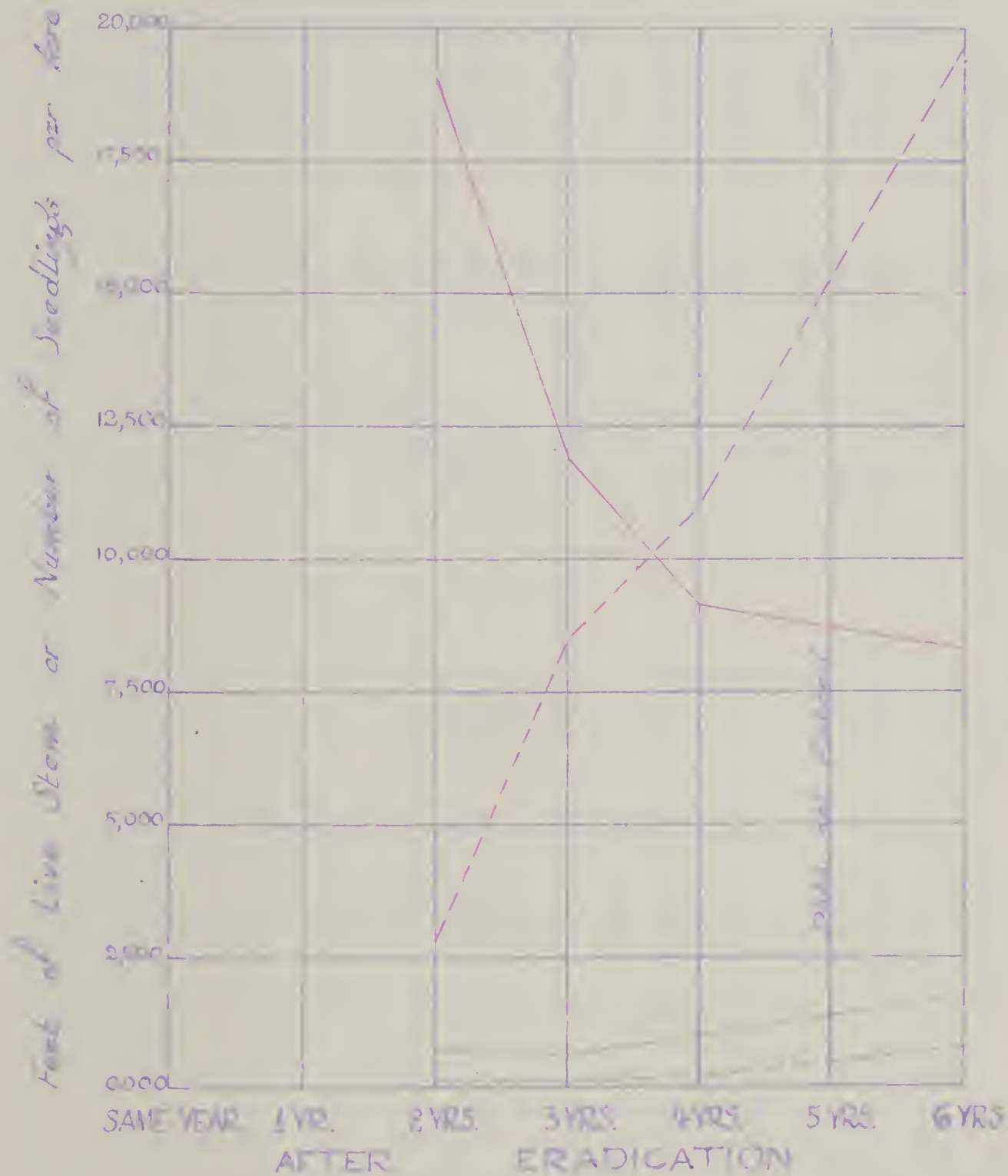


# CHART 23

Comparison of Chesapeake Bayling Growth and development after fire eradication in an Area logged and burned one year after eradication Plots A & B, with Plot C as an Area Not logged and burned in Plot E, Monroe County, Ohio.

Legend

- Seedling Bushes on Unburned Area
- Seedling Live Stems on Unburned Area
- Seedling Bushes on Burned Area
- Seedling Live Stems on Burned Area



Times of Inspection





Table 1. Tree-eradication Surveys Performed in North Central Region, 1971, by Program and Survey

Program	Total Acres		Acres W/ and W/PS Surveyed		Total	Acres to Work	Costs of Survey	
	White Pine & M.P. Planting	White Pine & M.P. Survey	White Pine	W.P. & M.P.			Per- Acres	Amount
State	306	60	60	250	310	3,902	3	\$678,500
Regular	273			273	273	3,702	4	
W.P.A.	211			211	211	27,850	133	1,473,700
Regular State	306			306	306	1,400	4	
W.P.A.	1,120	1,937		1,120	1,120	9,335	12	252,147
Total	1,426	1,937	1,937	3,363	3,363	20,015	259	1,100,000
W.P.A.	1,120	1,937	1,937	3,057	3,057	1,800	251	4,152,500
W.P.A.	27,092	73,092	672	28,776	28,776	31,000	1,570	5,661,000
Regular	2,462	25	25	2,487	2,487	31,571	3	
W.P.A.	175			175	175	2,500	3	70,000
Total	2,637	25	25	2,662	2,662	34,071	3	70,000
State	1,432	207	207	1,639	1,639	8,402	29	217,500
State-CDD	265	713	713	978	978	1,000	5	40,000
W.P.A.	11,000	8,000	8,000	19,000	19,000	39,321	365	1,660,100
Total	12,700	8,720	8,720	21,420	21,420	48,723	399	2,317,600
Regular	3,512	25	25	3,537	3,537	39,137	4	
State-CDD	3,107	1,075	1,075	4,182	4,182	21,927	110	961,500
W.P.A.	600	713	713	1,313	1,313	1,000	5	40,000
Total	7,219	1,793	1,793	9,012	9,012	62,064	219	1,003,000

\* Continued on lower section.



Table 14. Summary Totals North Central region, 1963

Agency Performing Work	No. Areas	Total Insulated			Tot North Protecting			North Protecting			Totals
		Steel	White	Insulated	White	Steel	Control	White	Steel	Control	
Regular	3	8,353		2,000		5,200		170		309	15
State	99	7,237		29,601		11,000		5,370		13,609	85
State-USA	11	304		4,023		2,000		100		2,124	4
U.P.A.	295	15,187		60,000		21,000		2,200		21,200	111
<b>Total</b>	<b>118</b>	<b>21,081</b>		<b>95,624</b>		<b>39,200</b>		<b>18,740</b>		<b>40,142</b>	<b>215</b>
Regular	11	1,725		2,916		110		1,920		2,502	10
U.P.A.	15	1,090		4,271		1,000		1,570		2,062	10
<b>Total</b>	<b>26</b>	<b>2,815</b>		<b>7,187</b>		<b>2,110</b>		<b>3,490</b>		<b>4,564</b>	<b>20</b>
Regular	71	1,401		23,000		1,000					
U.P.A.	2	100		100							
<b>Total</b>	<b>73</b>	<b>1,501</b>		<b>23,100</b>		<b>1,000</b>					
Regular	22	3,074		30,071		30,000		110		335	15
State	10	1,000		3,301		1,000		1,705		2,817	20
State-USA	10	7,000		25,101		11,000		1,570		13,609	20
U.P.A.	14	804		4,500		2,000		300		2,304	4
<b>Total</b>	<b>56</b>	<b>11,878</b>		<b>63,073</b>		<b>44,000</b>		<b>4,685</b>		<b>40,142</b>	<b>59</b>

a - Covered to "all lower protecting, Field Data & 1963"



































Table 1. (Series of 5-1957)

North Central Region, as December 31, 1957

State	Total Land Area, Acres				Water Area	Land Initially Forested		Acres Lost		Acres in Regeneration	
	State Total	Forest Area	Water Area	Total		State Total	Forest Area	State Total	Forest Area	State Total	Forest Area
Illinois	58,000	3,275	3,275	6,550	0	7,000	3,111	1,000	10,000	500	400
Indiana	36,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
Iowa	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
Michigan	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
Minnesota	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
Missouri	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
Nebraska	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
North Dakota	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
South Dakota	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
Wisconsin	56,000	3,000	3,000	6,000	0	3,000	3,000	0	0	0	0
<b>Total</b>	<b>560,000</b>	<b>30,000</b>	<b>30,000</b>	<b>60,000</b>	<b>0</b>	<b>560,000</b>	<b>30,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

71.9

















Table 11. Comparative Estimates Based Forward Elimination.  
North Federal Region, to December 31, 1961

Type	Fixed		Deferred	
	Locations	Number	Locations	Number
Childbirth	532	1,171	60	561
Test Age	511	2,178	"	"
Total	1,043	3,349	1,160	6,590
Expenditures	11,600	112,762	14,531	212,095
Income (1961)	5,260	25,306	5,260	25,306
Total	6,340	73,360	8,271	76,786
Expenditure	6,590	57,077	6,590	37,018
Balance	1,750	20,283	2,681	29,768

Table 12. Expenditures for All States that Accepted Work.  
December 31, 1961

Category	Expenditure Classification	1 Region -1961	2 Total Total	Total
General	Salaries	\$1,562.85	\$1,562.85	\$1,562.85
Food	Expenses	1,001.00	"	1,001.00
Dec 1961	Expenses	"	"	"
Medical	Salaries	5,687.21	1,370.20	6,557.21
Health	Expenses	727.23	217.23	944.46
Education, 1961	Expenses	"	"	"
General Medical	Salaries	"	1,370.20	1,370.20
General Medical	Expenses	"	"	"
Child Health	Salaries	6,578.24	"	6,578.24
Food	Expenses	151.75	200.00	351.75
Child Health	Expenses	"	"	"
Child Health	Salaries	5,225.72	"	5,225.72
Food	Expenses	686.27	175.75	862.02
Child Health	Expenses	"	"	"
OT Expenses	Salaries	20,205.56	2,205.56	22,411.12
OT Expenses	Expenses	7,150.73	824.74	7,975.47
OT Expenses	Expenses	"	"	"





























Table 13. Approximate Number Man-months Used on Federal N.P.A. Program, North Central Region, January 1 to December 31, 1961























Table 86. Summary of Ribes Infection Study, North Central 88-1. 10/2 Date





























# CONTINUOUS TABLE 12

## SUMMARY OF 1941 HIBES GRADUATION

BY PROGRAMS  
(Including all work - Initial and Reeducation)

Table #2  
Sheet #1

State	Total Acres Worked (Initial and Reeducation- tion)	Regular and Cooperative*			Number 8-hour Man-Days	W.P.A. and E.R.A.			Number 8-hour Man-Days
		Acres Worked	No. Hives Destroyed			Acres Worked	No. Hives Destroyed		
			Wild	Cult.			Wild	Cult.	
Illinois	2,037	354	-	4,569	15	1,031	9,510	-	128
Indiana	740	-	-	-	-	740	4,047	-	10
Iowa	10,821	-	-	-	-	10,821	180,507	456	1,445
Michigan	107,863	15,033	-	5,580	168	68,344	1,943,949	1,951	11,623
Minnesota	34,919	80	-	3	1	31,977	3,021,305	242	10,144
Ohio	20,277	6,992	-	1,993	15	11,202	244,442	9	2,590
Wisconsin	113,099	7,125	1	121,370	472	97,693	4,301,440	2,798	21,535
Total	259,796	28,394	1	129,823	672	261,908	9,705,200	3,054	41,144

\* Include work done with "Loo" funds.





Table #2  
Sheet #2

ORDINUS TABLE #2  
SUMMARY OF 1941 RIBES READICATION BY PROGRAM  
(Including all work - Initial and Reestablishment)

State	D.C.O.					Totals		
	Average Worked	No. Ribes Destroyed	Number 8-Hour Man-Days	Average Worked	No. Ribes Destroyed	Number 8-Hour Man-Days	Wild	Cult.
Illinois	652	21,586	74	2,037	36,067	218		
Indiana	-	-	-	740	4,047	45		
Iowa	-	-	-	10,821	180,507	1,449		
Michigan	4,485	50,564	278	107,663	2,000,093	1,551		
Minnesota	2,862	337,722	1,705	34,919	3,359,030	242		
Ohio	2,083	5,762	199	20,277	252,217	9		
Wisconsin	8,231	633,641	3,964	113,099	5,062,451	2,795		
<b>Total</b>	<b>16,234</b>	<b>1,049,509</b>	<b>6,880</b>	<b>297,728</b>	<b>10,894,412</b>	<b>3,059</b>		





TABLE 45  
 1960-61

TABLE 45  
 SUMMARY OF ALL OTHERS CONTROL WORK 1960-61

State	Collected Black Current Seedlings				Nursery Seedlings				Planted, 6-10 Mo. After Mapping W. F. 6 P. Control Area
	Number Seeds	Pl. Black Currents	Pl. White Currents	No. Planted	No. Planted	No. Planted	No. Planted	No. Planted	
Alabama	-	-	-	5	17,000	2,500	1,518	1	3,900
Arkansas	-	-	-	1	1,000	1,000	-	6	6,100
California	29,717	57	328	1043	-	-	-	-	30,300
Colorado	99,108	809	1,201	2,013	1,000	1,200	6,702	-	31,000
Connecticut	15,000	86	100	2,100	1,000	1,100	1,000	-	31,000
Delaware	-	-	-	-	-	-	-	-	-
District of Columbia	15,000	20	30	100	1,000	1,000	1,000	-	31,000
Florida	15,000	101	1,000	1,000	1,000	1,000	1,000	-	31,000
Georgia	-	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	-	-	-	-
Illinois	-	-	-	-	-	-	-	-	-
Indiana	-	-	-	-	-	-	-	-	-
Iowa	-	-	-	-	-	-	-	-	-
Kansas	-	-	-	-	-	-	-	-	-
Kentucky	-	-	-	-	-	-	-	-	-
Louisiana	-	-	-	-	-	-	-	-	-
Maine	-	-	-	-	-	-	-	-	-
Maryland	-	-	-	-	-	-	-	-	-
Massachusetts	-	-	-	-	-	-	-	-	-
Michigan	-	-	-	-	-	-	-	-	-
Minnesota	-	-	-	-	-	-	-	-	-
Mississippi	-	-	-	-	-	-	-	-	-
Missouri	-	-	-	-	-	-	-	-	-
Montana	-	-	-	-	-	-	-	-	-
Nebraska	-	-	-	-	-	-	-	-	-
Nevada	-	-	-	-	-	-	-	-	-
New Hampshire	-	-	-	-	-	-	-	-	-
New Jersey	-	-	-	-	-	-	-	-	-
New Mexico	-	-	-	-	-	-	-	-	-
New York	-	-	-	-	-	-	-	-	-
North Carolina	-	-	-	-	-	-	-	-	-
North Dakota	-	-	-	-	-	-	-	-	-
Ohio	-	-	-	-	-	-	-	-	-
Oklahoma	-	-	-	-	-	-	-	-	-
Oregon	-	-	-	-	-	-	-	-	-
Pennsylvania	-	-	-	-	-	-	-	-	-
Rhode Island	-	-	-	-	-	-	-	-	-
South Carolina	-	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	-	-	-	-	-
Tennessee	-	-	-	-	-	-	-	-	-
Texas	-	-	-	-	-	-	-	-	-
Utah	-	-	-	-	-	-	-	-	-
Vermont	-	-	-	-	-	-	-	-	-
Virginia	-	-	-	-	-	-	-	-	-
Washington	-	-	-	-	-	-	-	-	-
West Virginia	-	-	-	-	-	-	-	-	-
Wisconsin	-	-	-	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-

Note: Percentages of all seeds, percentages of those planted and those harvested.





TABLE #3

SUMMARY OF ALL OTHER CONTROL WORK FOR 1941

State	Treatment Infested Trees				Advances				Dereading			Total Control Days
	No. Trees Inspected	No. Trees Treated	No. Trees Removed	No. Centers Reopened	Number 3-1000 Day- days	Average Checked	Number 3-1000 Day- days	Average Checked	Number 3-1000 Day- days	Average Checked		
Illinois	-	-	-	-	-	-	-	-	-	1,032	-	-
Indiana	-	-	-	-	-	-	-	-	-	740	-	-
Iowa	-	-	-	-	-	-	-	-	-	-	-	-
Michigan	54,490	9,536	64	14,511	353	-	-	102,704	212	107,963	107	107
Minnesota	-	-	-	-	-	-	-	46,269	340	52,559	195	195
Ohio	-	-	-	-	-	-	-	6,175	6	6,726	6	6
Wisconsin	-	-	-	-	-	-	-	11,685	80	73,156	1201	1201
Total	54,490	9,536	64	14,511	353	-	-	166,733	638	167,407	1507	1507

a - All times included in Predication or Supervision.  
b - Includes 2 non-days merged to local control.

















Table 4. - (Cont'd)  
Percent of respondents for 1981

Table 4.  
Cont'd

State	Qualification						
	Basic, Incl. State and District Leaves	Basic Qualification	Basic Qualification Exemption	Basic Qualification Exemption	Basic Qualification Exemption	Basic Qualification Exemption	Basic Qualification Exemption
Alabama	42,000,000	11,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Alaska	99,000	100,000	100,000	100,000	100,000	100,000	100,000
Arizona	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Arkansas	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
California	27,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Colorado	6,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Connecticut	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Delaware	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
District of Columbia	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Florida	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Georgia	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Hawaii	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Idaho	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Illinois	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Indiana	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Iowa	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Kansas	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Kentucky	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Louisiana	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Maine	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Maryland	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Massachusetts	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Michigan	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Minnesota	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Mississippi	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Missouri	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Montana	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Nebraska	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Nevada	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
New Hampshire	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
New Jersey	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
New Mexico	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
New York	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
North Carolina	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
North Dakota	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Ohio	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Oklahoma	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Oregon	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Pennsylvania	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Rhode Island	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
South Carolina	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
South Dakota	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Tennessee	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Texas	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Utah	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Vermont	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Virginia	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Washington	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
West Virginia	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Wisconsin	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Wyoming	20,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000

a. Excludes 10,000,000 of respondents who are deceased.

















QUANTITIES TABLE #2

SUMMARY OF LITTER RECOVERY OF NATIONAL PARKS - 1961

TABLE #2  
August #2

National Parks (List separately)	Littered Work			Reconditioned Work			Totals		
	Accepted Material	Repacked Material	Destroyed Material	Material Repacked	Material Destroyed	Material Repacked	Material Destroyed	Material Repacked	Material Destroyed
20, 2014 Individual Area	251	20,700	71	251	20,700	251	20,700	251	20,700
(Total)	251	20,700	71	251	20,700	251	20,700	251	20,700





























# TABLE 1

SUMMARY OF LATE WHITE PINE INDICATIONS 1911-1941 (inclusive)

TABLE 1A  
Sheet 12

State	Average Worked b	Re-ored location			Totals			Per Acre					
		Number Blies Destroyed		Eaches 6-10	Per Acreage Worked to Control Areas f	Number Destroyed Wild g	Number 6-10 h	Percent Initial Ict. Read. Readle Purified location i	Number Initial Jct. Readle Purified location k	Percent Initial Jct. Readle Purified location l			
		Wild c	Cult. d	6-10 e									
Illinois	7,263	620,639	263	2,524	22,071	2,281,975	797	6,905	95.5	106.3	86.6	0.30	0.35
Indiana	8,816	62,582	30	919	75,321	629,089	513	1,425	70.7	5.4	7.2	0.05	0.30
Iowa	13,255	225,491	115	1,822	363,570	3,324,407	10,508	24,327	56.6	8.6	17.0	0.06	0.11
Michigan	200,690	5,864,769	6,439	55,873	1,229,739	60,966,464	18,864	300,301	79.9	94.7	29.3	0.23	0.26
Minnesota	90,052	5,622,338	702	26,619	1,63,565	63,906,430	15,301	172,860	60.4	747.2	54.7	0.37	0.30
Ohio	33,213	957,080	126	10,272	307,165	3,274,670	1,575	11,713	95.2	15.1	16.8	0.17	0.41
Wisconsin	193,473	5,590,969	836	11,356	1,107,096	89,817,555	25,126	385,275	61.9	87.5	38.9	0.36	0.21
Totals	468,770	13,755,288	6,076	101,147	3,228,221	150,274,275	14,011	243,275	84.0	16.4	30.1	0.28	0.33

Percentage of total white pine control area in State that has been worked initially.





# CONTINUED TABLE 12A

Summary of All Times Expenditures in Projects 1916-1924 (Inclusive)  
(Initials and Re-education)

TABLE 12A  
Page 11

State	Total Average Expenditures for Initial and Re-education	Regular Expenditures				Irregular Expenditures			Total Expenditures	Number of Months
		Advance Worked	Regular Expenditures	Irregular Expenditures	Irregular Expenditures	Advance Worked	Regular Expenditures	Irregular Expenditures		
Illinois	21,687	4,958	2,000,024	13	496	13,488	1,529,913	702	4,464	19,190
Iowa	75,321	15,669	350	6	6	40,091	303,894	1,615	2,100	2,100
Missouri	309,243	200	22,300	-	454	296,901	2,719,303	26,734	11,100	11,100
Nebraska	1,355,359	45,295	2,798,152	1,935	12,137	710,666	40,890,904	46,702	11,100	11,100
Ohio	435,202	5,216	538,783	8	2,909	291,452	37,432,374	16,206	53,628	53,628
Wisconsin	214,045	7,362	5,122	-	71	155,111	2,101,852	1,516	21,391	21,391
Minnesota	1,151,172	57,602	2,399,362	260	16,633	458,781	45,401,350	22,346	153,258	153,258
Total	5,010,417	10,000	5,200,000	2,200	20,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000

\*Total column = column B, Table 1A, Sheet 1, plus column E, Table 1A, Sheet 2.  
\* = Includes 205 man-days of center's labor, accomplishments of which are shown under 12A.





OUTLINE TABLE 129

Summary of the 1961 Submissions in Fisheries (1961-1962) (Final)

1961  
1962

State	B.C.C. and C.C.C.		P.R.A. or B.C.C.		Total Submissions	
	Approved Worked	Destroyed Wild	Approved Worked	Destroyed Wild	Approved Worked	Destroyed Wild
Alaska	2,131	372,036	1,915	-	1,915	372,036
California	16,032	106,576	2,713	6,323	2,713	106,576
Idaho	3,127	330,253	3,940	-	3,940	330,253
Montana	355,906	25,014,200	127,391	232,561	127,391	232,561
Nebraska	112,257	20,955,565	65,191	301,128	65,191	301,128
North Dakota	10,140	672,120	11,362	132,236	11,362	132,236
South Dakota	405,059	57,990,069	173,273	1,053,734	173,273	1,053,734
Utah	11,111	27,222,111	1,111	1,111	1,111	1,111
Washington	1,111	1,111	1,111	1,111	1,111	1,111
Wyoming	1,111	1,111	1,111	1,111	1,111	1,111
Total	1,111,111	1,111,111	1,111,111	1,111,111	1,111,111	1,111,111





# across about 1/4

Summary of all other common, 1973-1984 (Continued)

TABLE 83A  
CONT'D

Index	Estimated Glass Current Irradiation				Survey Radiation				Further Destroyed WFO 50%	Further Destroyed WFO 50%	Total Further Destroyed WFO 50%
	Inspection Made	Found Fused	Black Curvature	Number Black Curvature	Number Black Curvature	Number Black Curvature	Number Black Curvature	Number Black Curvature			
1111111111	103,067	592	564	55	55	55	55	55	1,512	1,512	202
22222222	83,001	314	-	150	150	150	150	150	1,254	1,254	87
33333333	207,873	1,536	6,330	4,526	4,526	4,526	4,526	4,526	1,254	1,254	645
44444444	882,166	14,802	142,095	35,690	35,690	35,690	35,690	35,690	1,254	1,254	20,177
55555555	213,664	3,260	23,306	12,001	12,001	12,001	12,001	12,001	1,254	1,254	4,950
66666666	4,815,754	8,837	72,726	25,776	25,776	25,776	25,776	25,776	1,254	1,254	1,812
77777777	921,760	6,599	37,048	32,129	32,129	32,129	32,129	32,129	1,254	1,254	7,912
88888888	1,000,000	2,000	20,000	10,000	10,000	10,000	10,000	10,000	1,254	1,254	2,000



















































































TABLE 45a

SUMMARY OF RIVER REIMBURSEMENT ON STATE AND PRIVATE LANDS 1913-1962 (inclusive)

State and Private Lands	Total Acres of White Pine	Total Acres (M.P. & Dept. Lands)	Average out-let water initially	Initial Reimbursement		
				Average worked	State Destroyed	State 6-hour 30-day
	a	b	c	d	e	f
Alabama	3,455	24,900	10,100	14,800	1,553,470	4,379
Indiana	5,751	94,072	27,467	66,905	357,700	3,907
Iowa	3,945	611,432	268,589	350,109	3,236,071	23,047
Kentucky	391,057	1,198,126	273,614	942,732	57,667,402	293,396
Minnesota	117,969	604,177	120,302	270,105	62,331,121	97,804
Missouri	16,553	311,507	141,000	170,827	2,096,825	11,371
Wisconsin	728,211	1,337,016	275,700	800,212	60,951,485	298,151
Total	1,911,941	3,086,140	1,008,717	1,460,116	107,882,786	600,000

a. Column 6, figures obtained from 1962 survey.





# CONSERVATION PLANS

## SUMMARY OF PLANS FOR CONSERVATION OF STATE AND PRIVATE LANDS 1915-1961 (Exhaustive)

TABLE 1  
1915-1961

State and Private Lands	Conservation Plans		Totals	
	Average Planned	Number of Plans	Average Planned	Number of Plans
Alabama	7,253	681,900	2,185,772	6,309
Arizona	7,253	60,720	320,332	6,309
Arkansas	10,279	125,900	1,301,977	24,869
California	121,225	5,792,715	1,124,366	267,900
Colorado	58,477	3,429,617	1,442,798	112,900
Connecticut	35,811	157,406	1,356,073	121,521
Delaware	102,947	1,157,000	21,207,863	205,107
Florida				



























